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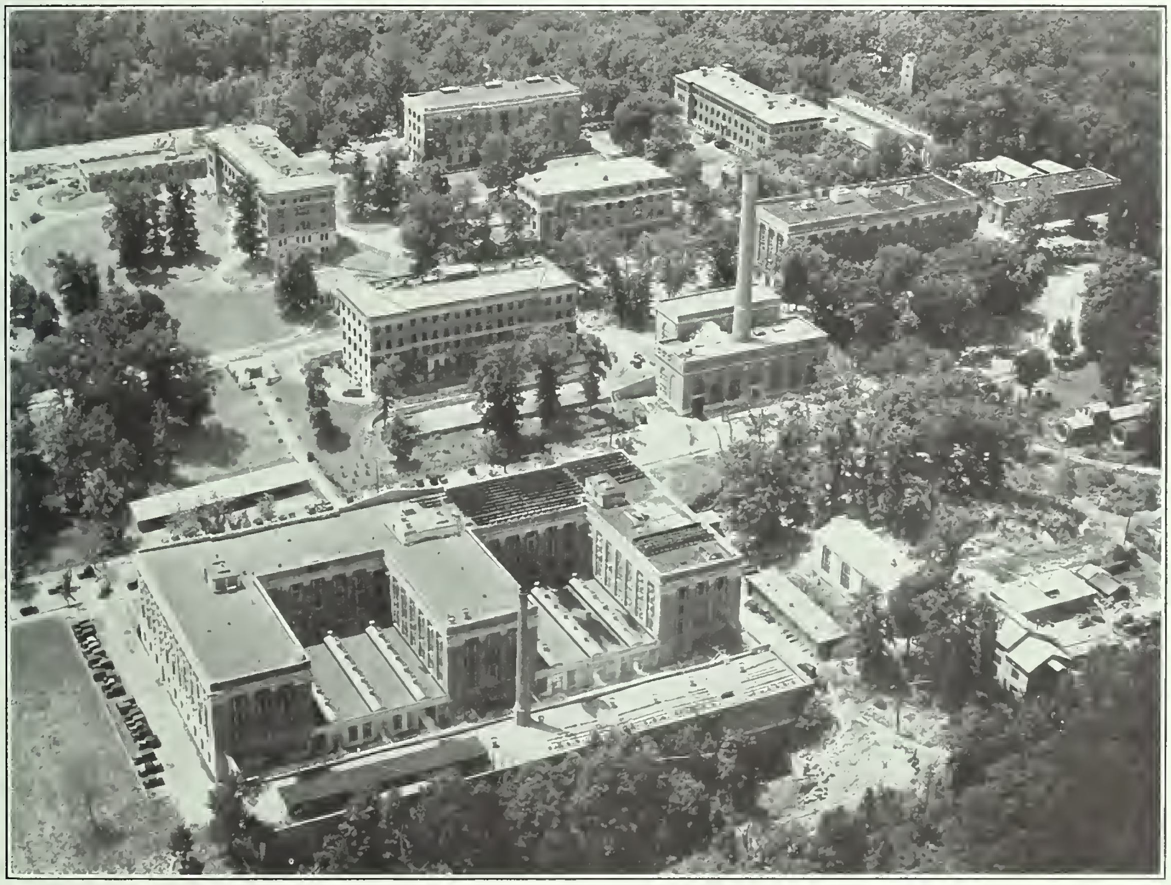
COMMERCIAL STANDARDS MONTHLY

A Review of Progress in Commercial Standardization and Simplification



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AIRPLANE VIEW OF BUREAU OF STANDARDS (LOOKING SOUTH)

ISSUED BY THE BUREAU OF STANDARDS OF THE UNITED STATES DEPARTMENT OF COMMERCE, WASHINGTON, D. C., U. S. A.

Vol. 8, No. 9 MARCH, 1932

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U. S. DEPARTMENT OF COMMERCE
R. P. LAMONT, Secretary

BUREAU OF STANDARDS
GEORGE K. BURGESS, Director

COMMERCIAL STANDARDS MONTHLY, S. F. Tillman, Editor

The Commercial Standardization Group

DIVISION OF SIMPLIFIED PRACTICE

Edwin W. Ely

The division of simplified practice cooperates with industrial and commercial groups to reduce waste, usually through eliminating unnecessary variety of product, method, or practice. Its function is to bring together all parties interested in a project of this character, and to coordinate their work in developing a simplified practice recommendation. Such work includes surveys of current practice, formulation of a simplified practice program, and presentation of that program for action by a general conference representing all interests. The division then transmits to all concerned a full report of the general conference, with a request for written acceptance of the action taken. When the volume of acceptances is sufficient to indicate initial success, the Department of Commerce indorses the program and publishes the recommendation. The division thereafter cooperates with a standing committee appointed by the industry concerned, in conducting periodic surveys to determine the degree of adherence, to maintain and extend support of the recommendation, and to secure data for reaffirmation or revision. Simplified practice may be applied to any commodity or activity in which it will reduce waste. The division stands ready to render service in developing and making effective any application of simplified practice which will reduce waste, stabilize business, or extend commerce.

BUILDING AND HOUSING DIVISION

J. S. Taylor

The division of building and housing, formed in 1921, cooperates with business, technical, and professional groups in furthering construction activities. It works to modernize building codes and to encourage improved standards for the quality of building construction, and the practical application of the latest development in design and use of building materials.

It encourages home ownership through the development of an enlarged, steadier, more intelligent, and more discriminating demand for dwellings—the largest single class of buildings which the construction industries provide.

The division also cooperates with other governmental agencies and with many private business and professional groups in efforts to distribute building activity more evenly throughout the year and to secure less fluctuation from year to year.

The work on city planning and zoning has the broad objective of making buildings more useful through proper location with respect to other structures, stabilizing of land values and property uses, well coordinated thoroughfare systems, and well laid out public works.

STANDARDIZATION
..IS..
A CONTINUING PROCESS

ITS AIM IS NOT FIXITY
OR STAGNATION
..BUT..
TO ADD SERVICEABILITY
AS OFTEN AS THE
POTENTIAL GAIN
MAKES IT WORTH WHILE

DIVISION OF SPECIFICATIONS

A. S. McAllister

The duties of the division of specifications are to promote and facilitate the use and unification of specifications. In doing so it carries on activities involving cooperation with technical societies; trade associations; Federal, State, and municipal Government specifications making and using agencies; producers, distributors, and consumers; and testing and research laboratories. It ascertains the Standardization and specifications promoting activities of the associations and societies, and brings to their attention the work being done by the commercial standardization group. It brings the Federal specifications and commercial standards to the attention of the maximum number of producers and users of commodities complying with these standards and specifications. It compiles and distributes lists of sources of supply of materials guaranteed to comply with the standards and specifications. It shows both buyers and sellers the benefits from handling nationally specified, certified, and labeled commodities. The division prepares directories of governmental and nongovernmental testing laboratories and the Directory of Specifications, and is working on an encyclopedia of specifications, the first two volumes of which have been issued, namely, "Standards and Specifications in the Wood-Using Industries" and "Standards and Specifications for Nonmetallic Minerals and their Products." It also aids in preparing the Standards Yearbook.

DIVISION OF TRADE STANDARDS

I. J. Fairchild

The division of trade standards, on request, assists industrial and commercial groups in the voluntary establishment of standards covering grades, quality, dimensional interchangeability, or other acceptance criteria as a national basis for marketing manufactured commodities.

The detail criteria are selected or determined voluntarily by interested buyers or sellers, without any Government dictation or domination, and adjusted at a general conference of producers, distributors, and users so as to represent the composite views of all branches. The division functions chiefly as a neutral agency to see that all interested elements are given full opportunity to be heard and satisfied; to solicit and record acceptances; and to publish and promulgate the standard when a satisfactory majority of acceptances is obtained and provided there is no active opposition.

Industries are encouraged to apply self-certifying labels to products meeting the commercial standard requirements, as a means of protecting the consumer and the scrupulous seller from misrepresentation or unfair methods of marketing.

Provision is made for regular revision of the standard through the appointment of a standing committee to consider periodically any necessity for revision of the standard in order that it may be kept constantly compatible with progress in the industry.

Address BUREAU OF STANDARDS, Washington, D. C., *for further information*

COMMERCIAL STANDARDS MONTHLY

A Review of Progress in
Commercial Standardization and Simplification

VOLUME 8 WASHINGTON, D. C., MARCH, 1932 NUMBER 9

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AN INVITATION TO VISIT THE BUREAU OF STANDARDS

A cordial invitation is extended to all interested in scientific progress to visit the laboratories of the Bureau of Standards when in Washington. A personally conducted trip is organized at 2.15 p. m. daily except on holidays. Special trips for groups may be arranged at other times by writing to the bureau in advance. The bureau's illustrated Visitor's Manual may be had for the asking. This lists the work in progress and gives an airplane view of the ensemble and a brief statement of typical discoveries and inventions which have been notable, basis contributions to radio, aviation, and other modern arts and industries.

TRUCK RIMS

▼ ▼ ▼

FEW PROBLEMS of the trucking industry have been given more consideration in recent years than the standardization of truck rims. It is generally recognized by operators that the greatest economy can be obtained by using, so far as possible, the same size, make, and type of rims on the largest number of vehicles.

Many advantages are to be gained in fleet operation where trucks and busses use the same size tire and rim equipment and also use the same make of rim throughout. Tires can be changed to best suit requirements. Extra wear can be obtained by placing partially worn tires in lighter service and the newer tires in operations that are more severe.

Where either semi or four-wheel trailers are used, savings can be made in tire investment if all rims are of one type, as it is thereby possible to eliminate the need of carrying an extra spare for the trailer. The same is true in having the same size tires front and rear on single or dual tired jobs. Only one spare will have to be carried and the tires can be shifted around at will.

—Editorial from February, 1932, FLEET OWNER.

UNIFORMITY IN TRAFFIC LAWS REDUCED ACCIDENTS

Oregon Adopted Uniform Vehicle Code in 1931 and Has Found That Compliance with Its Provisions Has Reduced Accidents

By HAL E. HOSS, *Secretary of State, Salem, Oreg.*

The State of Oregon took a forward step in motor-vehicle legislation in 1931, in the opinion of those conversant with conditions, when it adopted the third and fourth acts of the Uniform Vehicle Code, drafted by the National Conference on Street and Highway Safety, the former relating to the examination of operators and the latter to the regulation of traffic on the highways. The first and second acts of the code, adapted to state-wide legislation, provide motor vehicle registration and certificate of title laws, which have been a part of the Oregon motor-vehicle system since 1925. By overwhelming majorities, both houses of the 1931 legislature approved the two new measures, which had been indorsed enthusiastically by many prominent individuals, by organizations in the State interested in the promotion of safety and of uniformity in regulations, and by the office of the secretary of State, under who jurisdiction of motor-vehicle activities has been placed for many year.

Observance of traffic conditions in Oregon during the last few year, study of causes and results in Oregon and in other States, and helpful guidance of the national conference in advancing the development of better motor-vehicle legislation were responsible for my interest in the Uniform Code with its recommendations for perfecting laws governing automobiles and their operators. I attended the 1930 session of the conference in Washington, D. C., and obtained from it a general knowledge of the progress of other States along automotive lines and a specific suggested plan, analyzed and advocated by nationally known traffic experts, for the relief of the rapidly increasing traffic congestion with its attendant dangers.

Oregon, with a steady growth in motor-vehicle registration, with widely variant highway conditions, with laws not definite enough to cover these variances in conditions and to provide sufficient supervision over the operation of automobiles, and with a citizenry open minded toward changes, was ready for a revamping of its motor-vehicle statutes. After a study of the Uniform Code, it appeared to me that it was most vital for Oregon to consider those acts establishing a model highway traffic law, which included the basic rule for speed regulation and a new right-of-way proviso, and authorizing tests for operators of motor vehicles.

For many years motorists in Oregon had followed the practice of the basic rule for the amount of speed permitted. When the average driver was out in the open country, where crossroads were few and vision was clear for long distances ahead, his rate of speed was a good deal above the old limit of 35 miles an hour, and the factor of safety to himself and others guided him in the speed at which he traveled. When he was in the more closely settled districts, his rate was sharply reduced, and in the cities, even slower travel was automatic with him. Enforcement of a 35-mile limit for all conditions of roadway was felt by officers concerned with this duty to be impractical and nonessential to safety. Unfavorable publicity resulted in the elimination of speed traps, which sprang up in the smaller communities in the State several years ago, and officers were not put out on the road for the purpose of " getting " the driver who traveled a few miles faster than the exact speed established in the statutes, but for the enforcement of safety regulations for all. Since this basic rule was followed in practice to such a great extent in Oregon, it was argued that the law governing the speed of motor vehicles should be amended to permit the legal operation of a car in conformity with the standard of good sense as outlined in the basic rule. In other words, to keep Mr. Average Driver from being a law breaker every time he took his car out on the open highway a change in the law was needed. Oregon has hundreds of miles of hard-surfaced, straight stretches where the 35-mile limit was slower than imperative either for the safety of the driver or the users of the highway. The logic of this new recommendation and the other provisions of the model traffic act was readily seen by members of the legislature and the regulations for uniformity in traffic control with other progressive States were adopted.

Since the new traffic regulations became effective on June 6, 1931, public sentiment for the new law has increased. Reduction in motor-vehicle accidents in the State during the last six months of the year was 3.7 per cent and in fatalities a 33 per cent reduction was effected.

Under Oregon's former law, operators were required to obtain a license to drive, but no restrictions other than an age limit and a superficial inquiry as to the driver's possible physical inability to operate a car were made. A simple application form and a dollar bill alone were needed to get a permit to drive in Oregon. Watching the improvement in conditions in other States where operators' examinations had been requisite over a period of years, I was impressed by their definitely better traffic accident records. With accident rates increasing rapidly in the other States, it was clearly evident that the examination requirements were weeding out unfit drivers and above all were educating all motor-vehicle operators in rules of the road and in safe driving practices.

The value of the tests as educational factors was in itself sufficient indorsement for the new law, which became operative in Oregon July 1, 1931. While the provisions enacted in this State did not require an immediate calling in of all drivers' licenses outstanding, and allowed renewals to be mandatory some time within the three years following the effective date, interest was aroused at once in the law and its purposes and requirements, and this awakening of interest was at once beneficial. It was pleasing but surprising to note the inquiries and requests for information on the law, as it indicated among other things a healthy interest in any plan to promote greater highway safety. One brief article in a motorists' magazine brought more than 400 requests in three days following publication for the "Questions and Answers" booklets issued by this office to aid the individual who wishes to study the rules of the road preparatory to taking a drivers' examination. A series of radio talks resulted in another influx of requests for similar information, and probably 80 per cent of these two groups of inquiries were not from new drivers but were from those who had operated cars in Oregon for many years—drivers who wanted to be prepared on traffic questions when their licenses were called in for renewal. This fact was significant in demonstrating the average motorist's insufficient knowledge of the motor-vehicle law. Many operators who have completed the tests since July 1, have stressed that the examination has been most helpful to them in showing how little they actually knew about safe driving requirements and they have indorsed whole-heartedly the various features of the tests.

Oregon's method of conducting operators' examinations and the provisions of its law, including the regulations on revocations and suspensions of licenses, have been approved by national authorities in motor-vehicle administration. A study of the methods of examining operators in other States was largely responsible for the system that was built up and adapted to Oregon, and our State profited to no small extent by the experiences and experiments in other sections of the United States.

Viewing the accomplishments that have already been effected during the short time that these two acts of the Uniform Code have been operative and recognizing the value that similar legislation has had in other States, I look forward not only to a great advancement in safe and sane motor-vehicle operation in Oregon, but also to the time when uniform laws will be adopted in all States of the Union so that familiarity with the laws of one's own State will mean a knowledge of the requirements of the neighboring Commonwealth or the State through which one travels on vacation or business trips. From observation and personal experience, I am thoroughly convinced that the establishment of practical, workable, and uniform motor-vehicle laws such as Oregon adopted at the recommendation of the National Conference on Street and Highway Safety is at least a partial answer to the Nation's traffic problems.

S. A. E. 1932 ANNUAL MEETING HELD IN DETROIT

Meeting Considers Various Projects Relating to Standardization and Approves Report of Its Standards Committee

Various aspects of standardization in the automotive field were considered by members of the Society of Automotive Engineers attending the 1932 annual meeting of the society held January 25 to 29, 1932, in Detroit, Mich.

International standardization has received considerable recognition during the year 1931, the chairman of the society's standards committee, A. Boor, told the conference, pointing out that a number of international standards association committees in whose work the Society of Automotive Engineers is maintaining contact through the American Standards Association, were very active during the year. Among these are the committees on aeronautics, automobile parts, ball bearings, brass, bronze, etc., bolts and nuts, classification of machine fits, iron and steel, screw threads, and tires and rims for automobiles and airplanes.

The subject that has probably made the greatest progress toward international standardization is that of taper roller bearings. At the international conference on bearing standardization held at Copenhagen in May, 1931, Ernest Wooler, a member of the Society of Automotive Engineers ball and roller bearings division, represented the society. As a result of that conference on roller bearings, the ball and roller bearings division of the society recommended to the standards committee the adoption of a recommendation for taper roller bearings. This report will serve as a basis for international standardization and will be submitted through the American Standards Association's sectional committee on ball bearings to the national standardizing bodies of other countries, Mr. Boor said.

In concluding his report to the annual meeting Mr. Boor said that the plans of the standards committee are such that its work in the coming year will be commensurate with the requirements of the automotive industry; existing standards will be brought up to date as becomes necessary, and the interests of the industry in standardization will be advanced both here and abroad.

The regular meeting of the standards committee received the reports of its various divisions, which were approved as submitted, with the exception of those noted as follows:

The report of the aircraft division on airplane landing-wheel tires was amended to include revised tire loads for the 44 by 10 inch size as follows: For the 45-pound pressure, the load was raised to 4,500 pounds; for 50-pound pressure, to 5,000 pounds; for the 55-pound pressure to 5,500 pounds, and for the 60-pound pressure to 6,000 pounds.

In the report of the aircraft-engine division on carburetor flanges, four corrections in the tables of dimensions were noted, and the following flange thicknesses were added for all types of flange:

Stud size	Flange thickness
1/4	5/16
5/16	3/8
3/8	13/32

In the report of the electrical-equipment division on storage batteries, the minimum capacity in ampere-hours for motor-coach batteries was changed from the

8-hour rate to the 6-hour rate used in regular practice, and these ratings, together with the minimum-current ratings for 20 minutes, were changed by agreement among the battery manufacturers and the Automotive Electrical Association.

In the report of the gasoline-engine division on crank-case drain plugs, the recommendation was amended to include a note to the effect that where the socket type of plugs is used the internal-wrench measurements shall conform to standard plugs. Another column showing these dimensions will be added to the table in the recommendation.

The report of the tire and rim division was, upon request, referred back to the division for further consideration because of additional revisions now being considered in the standard for balloon tire and rim sizes shown on page 404 of the Society of Automotive Engineers Handbook.

Members of the production-activity committee, the production division of the standards committee, and others considered the project to establish a standard for finishes of machine surfaces that has been proposed under the procedure of the American Standards Association, with the society acting as a joint sponsor. A special investigating committee appointed by the American Standards Association, in preparing to submit its recommendations, has prepared the following scope for this project when a sectional committee is organized to proceed with it: Classification of machined or ground surfaces according to quality of finish, to include (*a*) standards of quality of finish for machined surfaces, (*b*) standards of quality of finish for ground surfaces, (*c*) methods of inspection for the quality grades standardized, and (*d*) designation of quality grades for use in specifications and drawings.

Those attending this conference concurred in the recommendation that the project be undertaken with the Society of Automotive Engineers as a sponsor but recommended to the investigating committee of the American Standards Association that only that part of the proposed scope included in items (*a*) and (*b*) as applying to metal surfaces be undertaken first by the sectional committee when organized. This procedure was recommended because of the very extensive field to which it applies as to materials, classes of finish, and quantity of production. This standardization, it was pointed out, if properly developed and applied, will be far-reaching in its effects, especially in the extensive field of automotive production, and for this reason it is considered unwise to undertake matters of too broad a scope over too wide range of products instead of by aiming at gradual, systematic progress.

A recommendation of the pitches for diameters above 1½ inches that are used for screws, bolts, nuts and component parts, was approved by the meeting of the screw threads division of the standards committee. This recommendation was drafted on information secured through a national survey of the automotive and other mechanical industries. This survey was made by the division at the request of the sectional committee for the standardization of screw threads, for which the Society of Automotive Engineers and the American Society of Mechanical Engineers are joint sponsors, as a further step in the establishment of an American standard for pitches commonly used for various classes of work.

The recommendation of the division includes three series of pitches—8, 12, and 16. The 8 and 12 series of pitches will be referred to the sectional committee for inclusion in the American standard for screw threads. The 16-inch series, which corresponds to the present S. A. E. standard extra-fine series for 1¾-inch diameter and larger, that is used largely for threaded parts other than screws, bolts, and nuts, will also be referred to the sectional committee for inclusion in the American standard if the sectional committee so desires.

A suggested standard for cap nuts, commonly referred to as acorn nuts, was submitted and approved for circularizing for comments of the industry. In formulating the specification, consideration was given to machining, manufacturing cost, appearance, and general commercial adaptability and includes both high and low crown types.

The division also considered the development of a rational classification of tolerances for screw threads in both the coarse and fine pitch series that would provide for the selection of tolerances to meet all classes of application throughout the usual ranges of diameter. As soon as these tables of tolerances can be completed, they will be published in the Society of Automotive Engineers Journal to afford opportunity for careful study before the society takes further action toward their adoption. One of the important features of the report will be the conformity of tolerances for screw threads with an established formula taking into consideration variations due to pitch, diameter, and length of engagement. The present plan of the division is, if possible, to submit a report for approval at the semiannual meeting of the society next June.

The transportation and maintenance session of the annual meeting was addressed by Joseph Geschelin, engineering editor of Automotive Industries, on Repair and Junking Standards Needed for Economy and Service Work. Repair standards proposed by Mr. Geschelin are believed by him to offer a means of administering more economically the tremendous capital investment in motor vehicles. With regard to meeting the issue, he stated the consensus to be that a need exists for a sensible, workable code of instructions for maintenance work, and that, if one is devised, it must come from the manufacturer. But it must be based on information which has been thoroughly threshed out between factory engineers, their service organization, and the users. Moreover, the issue must be met, because service stations are demanding definite action.

Denoting his proposed code as repair-service standards, the author said that it might consist of a system of factory-approved clearances and tolerances on fits for the vital reciprocating, oscillating, and revolving elements and should arise only from a study based on a consideration of engineering and production problems, all related definitely to the accumulated experience in the field, and that in such case the data can be segregated. Class 1 comprises the desirable limit, which will give the original factory dimensions and clearances; class 2, the intermediate limit, which is to be defined later; and class 3, the junking limit, which would specify the condition of maximum wear for mating parts beyond which it is not safe to operate.

Seven items of additional information which is desired by practical service men were listed, and the author said that there are two broad classes of standards—specific standards and so-called universal standards. He pointed out in the course of his paper that a large group of passenger-car and truck manufacturers is making a decided effort to provide maintenance men with more information.

The meeting of the military motor-transport advisory committee discussed what it could do in advising the War Department regarding its program of motor transport equipment with respect to dimensional standardization of the units in these vehicles. As a result of the discussion, a study of the Army's drawings and specifications was divided among six groups, each to discuss the specifications and drawings falling within its group and to cooperate with other groups where the subjects of their studies come together.

Col. Edgar S. Stayer, United States Army, representing the Quartermaster Corps, had previously discussed the motor-coach and motor-truck session of the annual meeting, in which he outlined the requirements placed upon the Quartermaster Corps in furnishing satisfactory motor-transport equipment. He called attention to the fact that motor transport must provide satisfactory transportation both to and in the theater of conflict under severe conditions, such as terrain covered with shell holes and other obstructions. He spoke of the necessity for the closest cooperation between industry and the Government departments in preparing to meet future conflicts and spoke of the need of industry's understanding what the requirements are in times of peace so as to fortify the country against the next war.

Colonel Stayer discussed power plants and motor trucks with respect to the needs of military transport. Through many years of experimenting and testing in the field of almost every type of drive in trucks of a number of capacities, the War Department has accumulated data that provide the basis for the compilation of a chart covering the military motor-transport fleet.

Maintenance of these vehicles, a function of the Quartermaster Corps, is a problem of major importance, and the corps has found that some form of simplified practice must be followed in the designing of the vehicles if maintenance is to be economical and efficient. A standardization program has been developed whereby it seems feasible to place all the types and ranges of capacity in five major series or groups.

SIMPLIFICATION OF SINGLETREES BEFORE INDUSTRY

The simplified practice recommendation covering singletrees, doubletrees, and neckyokes has been mailed to all interests by the Bureau of Standards for their consideration and written approval. The recommendation, if approved by the industry, is to become effective on April 1, 1932.

The simplification of singletrees was first suggested early in 1928 by manufacturers, through the National Singletree Institute. At a meeting held on May 25, 1928, in Cincinnati, a simplified practice committee was appointed by the industry to cooperate with the division of simplified practice of the Bureau of Standards in compiling the necessary data to show the need for simplification, and for use in drafting a tentative program. At subsequent meetings of the committee, held in Washington, D. C., and Louisville, Ky., surveys of production and sales were considered and a tentative list of stock items developed. This list was tentatively catalogued by manufacturers for sales purposes for a trial period. At the conclusion of this period, the manufacturers, acting through the National Singletree Institute, requested the Bureau of Standards to call a general conference of the industry for the purpose of developing a definite simplified practice recommendation.

The general conference was held at Chicago on November 23, 1931. Manufacturers, distributors, and users were invited to attend, or submit comments in writing, to the end that any action taken would represent the experience and needs of all concerned. The representative of the Bureau of Standards, in opening the conference, explained the purpose of the meeting, and the steps followed in the development of a simplified practice recommendation.

The industry estimates that this recommendation will result in the elimination of approximately 90 per cent of the items formerly listed as " stock " items in manufacturers' catalogues.

HOSPITAL RUBBER SHEETING

A recommended commercial standard for hospital rubber sheeting was mailed to the industry for acceptance on February 4. This standard was drafted by the American Hospital Association in cooperation with the Rubber Manufacturers Association and follows very closely the Federal specification for this commodity.

Acceptances are being received from a large number of manufacturers, distributors, and important users, indicating a widespread interest in the project.

The specification recommends a guarantee label certifying conformity to the specification and including the date of manufacture and manufacturer's name.

FEDERAL SPECIFICATION FOR BUILDERS' HARDWARE

Based upon the Federal specification for Builders' Hardware (Nontemplate) FF–H–101, copies of which are obtainable at 30 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C., the National Association of Purchasing Agents has recently released pamphlet No. 15, which is designed to assist purchasing agents in the more effective use of this specification. The National Association of Purchasing Agents pamphlet explains a number of the elementary fundamentals of builders' hardware, including terminology; describes the essential criteria which the purchasing agent should consider in making selections, and the items which are most important to look for on inspection of locks, latches, hinges, and other items of builders' hardware. Provided a total of 500 copies are ordered, this pamphlet will be available from the National Association of Purchasing Agents, 11 Park Place, New York City, at 30 cents each, $10 for 50 copies, and $20 for 100 copies, with mailing cost to be added to lots of 50 or 100.

AMERICAN STANDARDS ASSOCIATION

News of Associational Activities During Month of February

Current developments of the following standardization projects under the auspices and procedures of the American Standards Association have been reported by that association:

Standard symbols for mechanics approved.—Symbols for mechanics, structural engineering, and testing materials, have been approved as American standard. The standard consists of letter symbols for 69 quantities commonly used in these fields. Sponsors for the project are the American Association for the Advancement of Science, the American Institute of Electrical Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the Society for the Promotion of Engineering Education.

Dimensions of valves.—A proposed American standard giving center-to-face dimensions for three kinds of ferrous flanged valves, namely, wedge gate valves, globe valves, and angle valves, has been released for general criticism and comment and may be borrowed from the American Standards Association by anyone interested (29 West Thirty-ninth Street, New York). The proposed standard covers wedge gate valves in sizes from 1 inch to 24 inches outside diameter (cast iron, for 125 and 250 pounds steam pressure, and steel for steam pressures of 150, 300, 400, 600, 900, and 1,500 pounds); and globe and angle valves in sizes from one-half to 8 inches (cast iron for 250 pounds steam pressure, and steel for steam pressures of 300, 400, 600, 900, and 1,500 pounds). The draft was submitted in the fall of 1931 to a subcommittee on face-to-face dimensions of ferrous flanged valves of the sectional committee on pipe flanges and fittings. It was developed by the Manufacturers Standardization Society of the Valve and Fittings Industry, one of the sponsor bodies for the work of the committee, and was adopted by the society to become effective in so far as its members are concerned, on July 1, 1932. The subcommittee, after considering the draft, decided to have it distributed for general criticism and comment and it has thus been released to industry for this purpose.

Code for domestic ice refrigerators.—The association has just approved the code for testing domestic refrigerators using ice as American recommended practice. The code establishes a method whereby definite information may be obtained regarding the two essential elements in the performance of iced refrigerators—internal temperatures and rates of ice meltage. The code also stipulates the method of expression of these test results in such terms as to render them intelligible to all. Temperatures within the refrigerator are measured at four locations—one in the milk compartment, which should be the coldest section, and the others at three points within the main body of the refrigerator. The temperature of the milk compartment is stated separately, but the temperatures at the three other locations are averaged to derive a statement of average temperature in the "food compartment."

The rate of ice consumption is expressed in terms of meltage during 24 hours, beginning with a full charge of ice. The test is continued for record purposes through a period of at least three days, the record for each day being separated and those for the three days averaged to obtain the final statement.

The test code calls for a room temperature of 75° F. during the test, but there are recognized methods for readily converting the observed data with fair accuracy to represent performance at other room temperatures within a reasonable range.

Sponsors for the project are the American Society of Refrigerating Engineers and the Bureau of Home Economics of the United States Department of Agriculture. The development of the code was in charge of a subcommittee of the sectional committee on standards and specifications for refrigerators.

Proposed standards for symbols.—Drafts of proposed standards for graphical symbols for electric traction including railway signaling, for graphical symbols for radio, and for graphical symbols used for electric power and wiring, have been printed by the American Institute of Electrical Engineers, one of the sponsors for the project. The draft on electric traction is that first proposal circulated on this subject by the committee. The present proposals for graphical symbols for radio and for graphical symbols used for electric power and wiring are revisions of drafts previously issued. The symbols have been prepared by subgroups of the subcommittee on electrotechnical symbols, sectional committee on scientific and engineering abbreviations and symbols. The sponsors are the American Institute of Electrical Engineers, the American Association for the Advancement of Science, the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the Society for the Promotion of Engineering Education.

Railway control apparatus.—A standard for electric railway control apparatus has just been approved by the association as an American standard. The standard applies to control apparatus for all electric railway apparatus, including trackless trolleys and vehicles in which electric motors are used for propulsion. The provisions of the standard are divided into the following groups: Service conditions, definitions, rating, heating, limitations other than heating, and dielectric tests. The standard is a revision of that portion of the former standard for railway control and mine locomotive control apparatus which dealt with railway control. The revision was submitted by the proprietary sponsor—the American Institute of Electrical Engineers.

On September 9, 1924, a joint conference of representative manufacturers, distributors, and users of steel reinforcing bars drafted a simplified practice recommendation for cross-sectional areas. This recommendation was revised in April, 1930, accepted by the industry and promulgated by the Bureau of Standards as Simplified Practice Recommendation R26–30. The schedule was submitted to the American Standards Association jointly by the Concrete Steel Institute and the Bureau of Standards as indorsing sponsors. The association has just approved as an American standard for steel reinforcing bars this schedule which gives 11 standard cross sectional areas, ranging from 0.05 to 1.56 square inches. The institute, which represents a large percentage of the fabricators of steel reinforcing bars, has strongly promoted the establishment of the standard in question.

Threads for lamp sockets and bases.—An American standard for rolled threads for screw shells of electric sockets and lamp bases has been approved by the association. The standard covers the dimensions, tolerances, and gages for rolled threads of Edison-type screw shells intended for use in the manufacture of lamp bases and plugs, and of lamp and fuse holders. The dimensions concerned are given for five sizes—miniature, candelabra, intermediate, medium, and mogul. The standard was set up by a sectional committee organized in 1929 under the procedure of the American Standards Association and jointly sponsored by the American Society of Mechanical Engineers and the National Electrical Manufacturers Association. The Edison type of base screw shell as covered by the standard has been in use for nearly half a century. As early as 1888 the Edison Lamp Works made socket screw shells in accordance with a gage which differed from the present standard mainly in that it had a slight taper, but the pitch of the thread has remained unchanged from the beginning. An American Society of Mechanical Engineers standard was laid down in specifications published in 1915 in the transactions of the American Society of Mechanical Engineers. These served as a basis for the work of the sectional committee which resulted in the present standard.

Noise-measurement project.—The organization of a sectional committee on noise measurement under the procedure of the association was recommended by a general conference held in New York on January 29. It was also recommended that the committee function under the technical leadership of the Acoustical Society of America. The scope of the project as recommended by a steering committee is as follows: Preparation of general standards of nomenclature, units, scales, and measurement in the field of acoustics, with special reference to noise measurements.

The conference followed a request made by the Acoustical Society of America to the association to set up a national committee to correlate the activities of various technical and trade organizations which have been attempting individually to set up standards for noise measurement. Eight such organizations now have committees on this subject. It was pointed out that the diverse nomenclature and methods of measurement growing out of these uncorrelated activities were interfering with the progress of scientific work on the subject and that without real national standardization this condition would become worse as different individuals became accustomed to different concepts and terms. For the present the committee's work will be concentrated chiefly on the standardization of nomenclature, units, and scales. It is believed that further progress in the science of noise measurement is necessary before effective standardization of this phase of the subject can be completed. There is some confusion in the measurement of noise at the present time because of the complex nature of noises, the innumerable different types of noises and their effect upon the ear, and the fact that none of the noise meters yet designed can translate the approximate physiological and psychological effects of noise into definite units of measurement. Dr. Harvey Fletcher, of the Bell Telephone Laboratories, pointed out at the conference that to the average individual a noise composed of widely separated frequencies is less disturbing than a noise of equal intensity but having components close together in the frequency range.

WOOL AND PART-WOOL BLANKETS

A preliminary conference of representative manufacturers of wool and part-wool blankets was held in New York City on February 10, to consider a tentative draft of the Proposed Commercial Standard for Labeling Wool and Part-Wool Blankets, which had been presented on January 12 as a substitute for the draft adopted by the general conference of November 20, 1931.

The substitute draft, which was reviewed in detail and accepted without change by the manufacturers, provides that no finished blanket containing less than 5 per cent wool shall carry the word " wool " in any form; that blankets containing between 5 and 25 per cent wool shall be labeled " Part wool, not less than 5 per cent "; that all blankets carrying more than 25 per cent wool shall be labeled with the guaranteed (minimum) wool content in percentage and that all blankets above 98 per cent wool shall be labeled "All wool."

The conference recommended that copies of the proposed standard be mailed to all manufacturers, distributors, and users for comment and review, together with an invitation to attend a second general conference to be held in New York City on March 11, 1932.

INTERNATIONAL COMPARISON OF X-RAY STANDARDS

Direct comparisons between the X-ray ionization standards of the United States, England, France, and Germany are described in the January number of the Bureau of Standards Journal of Research. The small guarded field ionization chamber designed and constructed at the Bureau of Standards, which was used as the working standard, was transported to the several laboratories. Careful check of the instrument calibration at each laboratory showed no change resulting from transportation.

Complete corrections were made for air absorption, differences in current measurements, and differences between chamber diaphragms. The final agreement between the United States, English, and German standards was plus 0.5 per cent. The ratio between the international Röntgen and Solomons unit efor hard radiation (H. V. L. greater than 0.75 mm cu.) was 2.29. As a result of diaphragm discrepancies found in England, a study of diaphragm measurements was made. It was found that the lead diaphragms tended to warp with age, thereby rendering difficult an accurate determination of their area. Plug gage and micrometer microscope measurements were averaged for the final results.

THICKNESS OF TEXTILES AND SIMILAR MATERIALS

Limitation of Variety of Thickness Gages to Facilitate Measurement of Textiles

By Warren E. Emley, *Bureau of Standards*

The thickness of a blanket is a matter of definition rather than a matter of fact. It follows, therefore, that if an agreement can be reached as to the exact meaning of the word thickness, then, and not till then, can the dimension be precisely measured.

For ordinary purposes, the thickness of an object is measured by means of a carpenter's rule. If the edges of the object are sufficiently clear cut, and the eyesight and the care used by the operator are sufficiently good, it is possible to make such measurements to the nearest sixty-fourth of an inch. With a machinist's rule and optimum working conditions, measurements to the nearest hundredth of an inch are possible.

When it became necessary to make measurements with greater precision, recourse was had to some kind of optical magnifying device—a reading glass, or a microscope. Unfortunately, this magnification emphasized the fact that the bounding surfaces of most objects are not planes. The operator looking at the cross section of a blanket under high magnification, is confronted with the difficulty of deciding just where are the limiting surfaces between which the thickness is to be measured.

To eliminate the unnecessary varieties of thickness gages, it is proposed to define thickness as the distance between the presser foot and the anvil when they are in contact with the object and under a pressure of 1 pound per square inch, sufficient time being allowed for the foot to come to rest.

To overcome this difficulty, the object may be placed between two flat plates. The distance between the plates can then be measured with comparative ease and precision.

The machinist's micrometer may be considered as an adaptation of the above, wherein one of the plates is fixed, and the other is mounted on the end of a screw. The specimen is held in contact with the fixed plate, and the movable plate is screwed into contact with it. The position of the movable plate is then read from a suitable scale on the screw. Some of these micrometers are provided with ratchets which prevent the operator from screwing the plates together too hard.

If a machinist's micrometer were used to measure the thickness of a blanket, difficulties would be encountered similar to those which make the optical devices impractical. Just when are the two plates in contact with the surfaces of the blanket?

The textile industry has, therefore, turned to another adaptation of the 2-plate method, known as the "thickness gage." (See illustration.) The lower plate is fixed in a horizontal position, and is called the anvil. The object to be measured is laid on the anvil. The upper plate called the presser foot is lowered until it rests on the object, when its position is read from a suitable dial.

The laws of physics tell us that, as the presser foot rests on the object, it must sink in, more or less. The amount to which it sinks in is directly subtracted by the gage, the difference being the measured thickness of the object. It is therefore imperative that we study the factors which govern this phenomenon. There are three groups of such factors—the elastic properties of the object; the shape and size of the object; and the shape, size, and weight of the presser foot.

The foot will sink more readly into a soft body than into a harder one. As it sinks in, reacting forces will develop within the body and will eventually come to equilibrium with the force of gravity acting on the foot, when the foot will cease to move. The ability of the body to resist compression is an important factor, and, since this ability is an inherent property of the material, the depth to which the foot will sink depends upon the kind of material which is being measured.

In this connection, it is well to remember that the elastic properties of materials are apt to vary with conditions. Temperature and moisture may have important effects, and should be controlled where precise measurements are required. Some materials are plastic rather than elastic, so that an appreciable time is required for the foot to come to rest.

The stresses set up in the object by the weight of the presser foot are distributed throughout the object in accordance with the regular physical laws. If all three dimensions are so large in comparison with the size of the presser foot that they may be considered infinite, the stresses will be distributed in a regular, predictable manner. But if any one of the dimensions is too small to meet this condition, the stresses will be arranged differently, the amount to which the presser foot sinks into the object will be different, and the thickness as measured will be affected correspondingly.

It is to be noted that the above argument involves all three of the dimensions of the object. If the amount to which the presser foot sinks into the specimen may be called the "error of measurement," then it is seen that this error is not a constant, but varies with the very thing which is being measured—the thickness of the object. This is a serious criticism of the thickness gage as a measuring instrument, and can be met only by rigid adherence to empirical conditions set up for the use of the instrument.

Fortunately, the shape of the presser foot has been pretty well standardized—a flat circular disk.

The amount to which the presser foot sinks into the object depends upon the load applied. A heavy foot will sink farther than a lighter one if they are of the same size. A smaller foot will sink farther than a larger one if they are of the same weight. (The weight of the foot includes that of all moving parts attached to it.) If the weight is divided by the area, the result may be expressed in units of pressure (pounds per square inch), which permits intercomparison of different gages.

It might be expected that the amount to which the foot sinks into the object would vary directly with the pressure on the foot. A study of the strain distribution within the specimen, confirmed by experimental evidence, proves that this is not so. With small pressures, any slight change in pressure makes a considerable difference in this " error of measurements "; with larger pressures, the effect of a similar slight change will probably be negligible.

The size and weight of the presser foot are entirely within the control of the gage manufacturer, who seems to have adhered consistently to the position of making whatever his customers demand.

One group of customers, the textile manufacturers, has adopted a foot which is three-eighth inch in diameter and weighs 6 ounces. Another group (the rubber manufacturers) has adopted a foot which is one-fourth inch in diameter and weighs 9 ounces. From the above discussion it will be seen that there can be no more reason for one of these specifications than for the other, and that if the thickness of the same object is measured by both gages, the results will certainly be different.

Other industries have adopted, independently, different weights, different areas, and even different methods of using these gages, until finally the situation became chaotic.

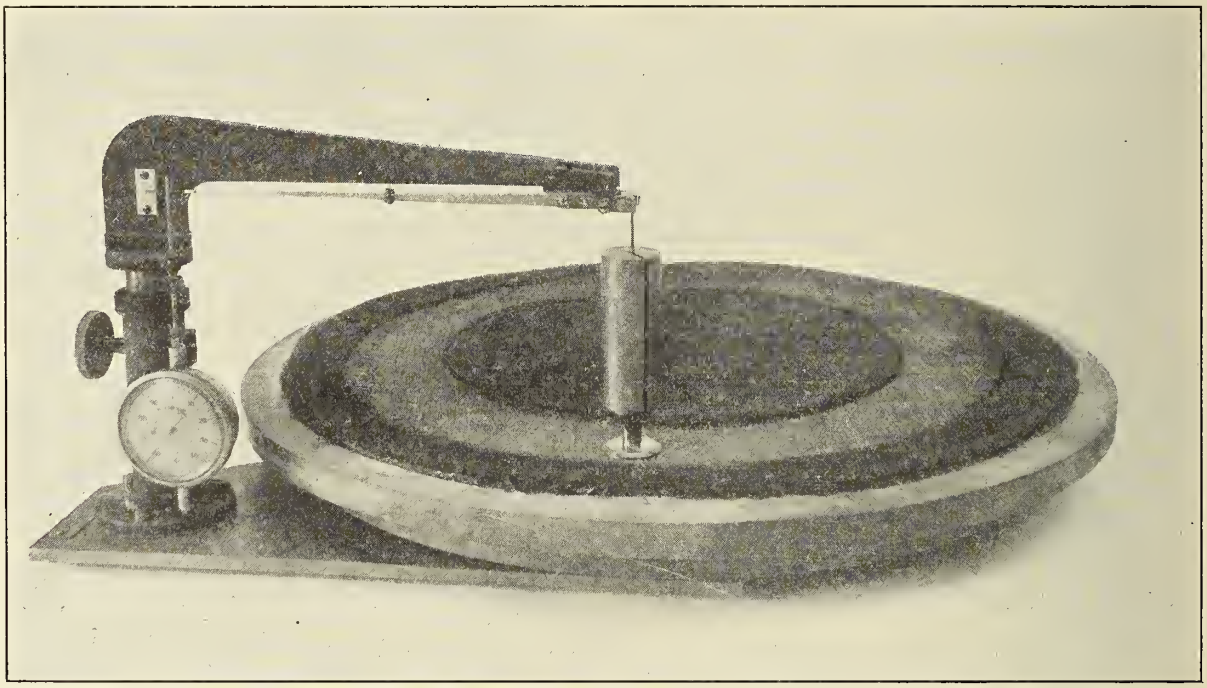
For instance, if cotton tape used for electrical insulation, is considered as a woven fabric (which it is), its thickness should be measured with ⅜-inch 6-ounce foot. If it is considered as an electrical insulating material, its thickness should be measured with a ratchet micrometer, with the ratchet set to give a pressure of about 27 pounds per square inch. But there happens to be a separate specification for this tape, which says that the thickness shall be measured with a foot of seven-sixteenths inch to one-half inch diameter, with no load specified. The method for measuring silk tape is the same as that for cotton, but for rubber tape or friction tape, the ¼-inch 9-ounce foot must be used, and for asbestos tape, the foot shall be seven-sixteenths inch to one-half inch, and the pressure such that the specimen will " slip without stretching."

The rubber manufacturers who buy tire cord must not use the same gage for measuring the thickness of the cord as they use for measuring the thickness of an inner tube, and a rubber glove requires the use of a third style of gage.

Any company which deals in a variety of materials which are bought, sold, and tested according to nationally recognized specifications, must have available a battery of thickness gages. Since the measurement of thickness is not usually considered as one which requires any great skill, it is apt to be assigned to one of those employees who has had the least scientific training. This employee must select from the battery the particular gage which must be used with the material he is testing. How many mistakes are made at this point?

A change in the moisture content of a fabric, which is quickly brought about by any change in the relative humidity or the temperature of the air surrounding it, may change not only the actual thickness of the fabric, but also its elastic properties and thus affect the indicated thickness. The indicated thickness will likewise be decreased if the operator drops the foot onto the sample instead of lowering it gently, or if he lets the load stay on for a minute or more before taking the reading. The most prolific source of error is the probability that the gage used will be different from the one required for the particular material being measured.

Gages are generally graduated to thousandths of an inch—some few to ten-thousandths. In view of the probable errors indicated above, the value of the third



Gage designed and built at the Bureau of Standards for measuring the thickness of carpets decimal place is decidedly questionable, except when the material is sufficiently rigid or sufficiently thin to make these errors negligible.

Suppose, for example, one were called upon to measure the thickness of a sample of tire cord. The trained scientist would refer to the specification, select the gage required, and use it according to the method therein prescribed. He will find that he is required to use a gage having a foot three-eights inch in diameter, and apply it with a pressure "equivalent to that obtained by dropping a weight of 4 ounces a distance of one-fourth inch vertically."[1] Being a trained scientist, he would realize that the quoted directions are ambiguous, to put it mildly, and would try to guess what the people who wrote the specifications really meant.

Suppose the reading obtained by the first measurement was 0.027 inch. Having in mind the defects inherent in the method, the ambiguity of the directions, and similar factors, the scientist would probably write this 0.02_7 inch, indicating that he was pretty sure of the second decimal, but that the third was little better than a good guess. If he took 10 readings and averaged them, he would feel a little more certain of the third decimal, and might express the result as 0.027 inch.

But routine thickness measurements are not usually made by trained scientists. The boy assigned to the work could hardly be expected to recognize and evaluate the probable sources of error. When he reads the gage, he puts down 0.027 inch, or probably, in an excess of zeal, he interpolates between the graduations, and calls it 0.0273 inch. Averaging 10 such readings, he reports the result as 0.0273 inch. The executive who receives the report undoubtedly knows that the value in the third decimal is dubious, and the fourth is absurd. But he probably becomes calloused by repetition. Only in this way can the fact be explained that this same specification places a tolerance of 3 per cent on the thickness of tire cord. This tolerance amounts to about 0.0008 inch, and is not enough to allow for the probable errors of measurement. It can not accomplish the main purpose of a tolerance, which is an allowance for actual variations in the thickness of the material.

Measurements to this degree of precision can be made with a thickness gage only when the design and use of the gage are set forth in complete detail and rigidly adhered to.

The ⅜-inch 6-ounce gage is in general use in the textile industry; the ¼-inch 9-ounce gage is in general use in the rubber industry. Neither of them is right; neither is wrong. They both represent trade customs which have grown up through the years and have finally been crystallized in the form of specifications. There are many laboratories wherein both textiles and rubber are tested. These laboratories are now required to have two gages (with the chance of using the wrong one) when one would do just as well. Multiply this by the number of industries in the country, and it will be seen that here is a wonderful opportunity for simplification.

Suppose that the tire cord cited above, when measured by the standard method, was found to be 0.027 inch thick. If the textiles gage (⅜ inch 6 ounces) had been used, the indicated thickness would probably be about 0.029 inch; with the rubber gage (¼ inch 9 ounces), about 0.024 inch. What is the "thickness" of this cord? Obviously, it is a matter of definition.

To eliminate the unnecessary varieties of thickness gages, it is proposed to define thickness as the distance between the presser foot and the anvil when they are in contact with the object and under a pressure of 1 pound per square inch, sufficient time being allowed for the foot to come to rest.

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[1] A. S. T. M. specification D-179-30.

MUNICIPAL CONTROLLER FOR SAN FRANCISCO

A most significant change in San Francisco's system of centralized purchasing was consummated on January 8, 1932, when the position of municipal controller, created under the charter recently adopted for the city, went into operation. None the less significant, and auspicious, too, was the appointment to this important office of Leonard S. Leavy, the then city purchaser of the city and county of San Francisco, who has for many years been chairman of the governmental group in the National Association of Purchasing Agents, and national vice president of the National Association of Purchasing Agents.

Under the new charter, the controller assumes, among other exacting duties, those of the county auditor. As such he becomes responsible for every penny spent in each city department and is authorized by law to refuse to approve contracts whenever he deems them of no advantage to the city.

Aside from the more general demands of his office, alluded to in the preceding paragraph, the newly appointed controller for San Francisco has many lesser calls upon his official time. He must, for example, make a monthly report to the mayor and board of supervisors, showing the exact status of every fund and the remaining balance—no mean task in itself. He must attempt, in so far as is humanly possible, to prevent waste and departmental deficits; must estimate the yearly revenues and expenditures; and prepare the annual budget for the mayor. Further, the controller has been given the authority, under the new charter, to supervise the work of the city purchasing agent—an appointive position by the chief administrative officer.

In order to make the controller's position independent and more effective, he is protected by charter against all political interference. Subservient to no one after appointment, he may be removed from office only by a two-thirds vote of the supervisors upon a hearing of charges preferred against him. Incidentally, this position of trust carries a salary of $10,000 a year.

It is expected that the city will profit greatly by the changed order of things. San Francisco is now having built, upon the controller's recommendation, an $800,000 central warehouse for the bureau of supplies, a structure which it is believed will, through economies in handling supplies, pay for itself in the first six months of its operation.

STANDARDIZATION OF COUNTY ROAD SPECIFICATIONS

Present Differences Existing in Road Construction Due to Complicated Contract Forms Can Be Eliminated Through Adoption of Uniform Specifications

By W. O. Washington [1]

By specifications here is meant, in particular, those items in the specifications and contract forms, usually known as the "general requirements," which are largely common to all county road construction work, and not to the special and technical detail specification items that apply only to a specific job and must be covered specifically in each case.

Any contractor or other person who has had occasion to examine county-road specifications in several localities, even in the same State, has noted the confusion and the effort usually required to reconcile and compare their requirements with work of similar nature elsewhere done under different specifications. Some counties have specifications peculiar to themselves, differing from those used anywhere else for work of standard kinds. This condition leads to higher prices for their work, due to the many uncertainties as to the requirements and lack of uniformity with other specifications.

> The need for standardization of the general requirements of county road specification and contract forms is apparent from the confusion which now exists. Unfavorable criticism and reduced competition in county work are caused by lack of definiteness and clearness of specifications and contract forms, as well as unusual requirements or the entire absence of forms. If uniform requirements on successive projects in the same county and standard provisions among counties of the same State are established, county contract work will become more attractive to bidders and, in many cases, costs will be reduced. In view of the importance that the American Road Builders' Association attaches to this matter, Mr. Washington's special article on the subject will be of considerable interest to the readers of the COMMERCIAL STANDARDS MONTHLY.

This condition is unnecessary and can be easily remedied by the counties adopting uniform specifications. An important objective of the county highway officials' division of the American Road Builders' Association is to advocate and take the lead in assisting all counties in this standardization of specifications.

To bring about the adoption and use of standard specifications is largely a matter of education and leadership. Experienced persons connected with county road work readily see the unsatisfactory conditions that have existed and still exist in many places and are in sympathy with methods for correcting the conditions. Standard specifications already worked out to fit all general conditions, such as have been prepared by the American Road Builders' Association, can be utilized. County authorities must be made to realize that something is wrong, be convinced that it can be corrected then shown how to make the needed corrections.

Many of the more progressive counties throughout the United States have already adopted and are using road specifications like or similar to those of their respective State governments. The State governments have already gone through a standardization development under the direction or leadership of the United States Bureau of Public Roads. This process is a natural one as soon as the counties realize the necessity of action. All experienced highway engineers realize the great advantage in costs and in supervision of using specifications that are standard, at least in the State, and with which the contractors are familiar.

With adoption of uniform standard specifications by the counties will follow a lowering of unit prices in most cases and a better understanding between contractors, inspectors, and engineers, with less friction and confusion during the supervision of the work.

This end is to be greatly desired, especially at the present time, when counties are assuming greater responsibilities in the building of secondary and local roads in most States, and it is to be hoped that all agencies will cooperate in its accomplishment.

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[1] Cameron County, Tex., county engineer, Brownsville. This article is based on the report made by the county committee on legislation, administration, and finance, American Road Builders' Association, to the annual convention of the association, Jan. 12, 1932, in Detroit.

SIMPLIFIED LIST OF METALLIC CARTRIDGES REAFFIRMED

On October 19, 1926, a general conference of representatives of manufacturers and distributors of metallic cartridges approved a simplified list of stock items. Following formal acceptance of the industry a simplified practice recommendation on the subject became effective on January 1, 1927, under the procedure of the division of simplified practice, Bureau of Standards.

This recommendation was recently resubmitted to the industry for review and decision as to whether or not the list of stock items should be revised. The standing committee of the industry in charge of this program has reaffirmed the recommendation, without change, for another active year.

Through the promulgation of this recommendation the number of stock varieties of metallic cartridges was reduced from 348 to 256, an elimination of approximately 26 per cent.

AMERICAN DENTAL ASSOCIATION

Certification of Quality Is Backbone of Medicinal Association's Program for Standardization

By Dr. Harry B. Pinney[1]

The American Dental Association is interested in the standardization of the materials used in the construction of dental restorations and in the quality of medicinal preparations used by the dental profession.

The research commission of the association has supported research activities at the Bureau of Standards with the objects of developing specifications for the materials entering into the manufacture of dental restorations and in improving methods of utilizing these materials. This activity has resulted in the publication of standards for dental amalgam alloys, inlay casting investments, inlay casting waxes, and impression compounds. Specifications for three types of inlay casting golds are being prepared for publication and work is in progress toward the development of specifications for wrought clasp and orthodontia alloys. Specifications for other types of casting golds and other dental materials are scheduled for development as rapidly as the available personnel will permit.

Manufacturers of dental materials have been asked to certify that their products meet the published specifications. In addition to the certificate itself, satisfactory evidence of physical tests must be submitted to show that the manufacturer has tested his material and that its properties meet the requirements. A list of products so certified is being prepared for publication.

The association also maintains a bureau of chemistry in its Chicago headquarters. This bureau was organized primarily to give to dentistry and to the public information on dental proprietary remedies and dental nostrums. The bureau publishes reports on these types of materials in the Journal of the American Dental Association. Articles on dental materia medica have also originated in this bureau and preliminary investigations made of a number of products. The bureau also examines new proprietary products with the view of preparing chemical specifications.

In order to advise the dental profession and the public concerning dental proprietary and nonofficial remedies and materials in regard to composition and therapeutic usefulness, there has been organized a Council on Dental Therapeutics. The endeavors of the council are directed toward the goal of protecting the dental profession and the public against fraud, undesirable secrecy, and objectionable advertising in the marketing of proprietary and nonofficial articles. The council consists of 10 members, 5 from the dental profession and 5 from related scientific fields. The council lists materials as "accepted nonofficial dental remedies" when the articles are found to comply with the rules of the council, which are as follows:

Composition.—No article will be accepted for inclusion in the list, "accepted nonofficial dental remedies," or retained therein, unless its composition is published. For simple substances, the scientific name and the chemical formula, rational or structural, if known, should be supplied. For mixtures, the amount of each active medicinal ingredient in a given quantity of the article must be stated. The general composition of the vehicle, its alcoholic percentage and the identity of the preservatives must be furnished.

Identification.—No article will be accepted or retained unless suitable tests for determining its composition are furnished to the council. In the case of chemical compounds, these shall consist of tests for identity and purity. In the case of mixtures, description of methods for determining the amount of active strength of the potent or otherwise important ingredients shall be furnished if practicable.

Direct advertising.—No article that is advertised to the public will be accepted or retained, but this rule shall not apply to (*a*) disinfectants, germicides, and antiseptics, provided the advertising is limited to conservative recommendations for their use for oral hygiene purposes; and provided they are not advertised as curative agents, either directly or inferentially; (*b*) dentrifices (tooth pastes and powders); provided, of course, no such agent is known to contain harmful materials and none of the lay advertising is contrary to the council's attitude on dentifrices; (*c*) other prophylactic agents about which the public should be informed which would not lead to harmful self-medication provided (1) they are not advertised as curative agents, and provided (2) advertising does not go beyond that passed by the council for dentists; and (*d*) medicinal foods, except when advertised as curative agents.

Indirect advertising.—No article will be accepted or retained if the label, package, or circular accompanying the package contains the names of diseases or conditions in the treatment of which the article is said to be indicated. The therapeutic indications and properties may be stated, provided such statements do not suggest self-medication. Dosage may be indicated. (This rule shall not apply to remedies with which self-medication is altogether improbable.)

False claims as to origin.—No article will be accepted or retained concerning which the manufacturer or his agents make false or misleading statements as to source, raw material from which made, or method of preparation.

Unwarranted therapeutic claims.—No article will be accepted or retained concerning which the manufacturer or his agents make unwarranted, exaggerated, or misleading statements as to the therapeutic value.

Poisonous substances.—The principal label on an article containing "poisonous" or "potent" substances must state plainly the amount of each of such ingredients in a given quantity of the product.

Objectionable names.—Proprietary names for medicinal or dental articles coming within the scope of this council will be recognized only when the council shall deem the use of such exclusive names to be in the interest of public welfare. Names which are misleading or which suggest diseases, pathologic conditions, or therapeutic indications will not be recognized.

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[1] Secretary, American Dental Association, 212 East Superior Street, Chicago, Ill.

In the case of pharmaceutic preparations or mixtures, the name must be so framed as to indicate clearly the most potent ingredients. In the case of dentifrices, the council's attitude on mixtures will guide the council in the interpretation on this rule.

Products with protected names.—If the article is patented— either process or product, or both—the number of such patent or patents must be furnished to the council. Furthermore, if the name of an article is registered or the label copyrighted, the registration (trade-mark) number and a copy of the protected label should be furnished the council. In case of registration in foreign countries, the name under which the article is registered should be supplied. In the case of dentifrices, the provisions of the council's attitude on mixtures will guide the council in the retention of a dentifrice marketed under a protected name.

Unscientific and useless articles.—No article will be accepted or retained which, because of its unscientific composition is useless or inimical to the best interest of the public or of the dental profession. Thus a proprietary remedy, which is acceptable to the council on the basis of these rules, may be considered a proprietary medicine of merit and which is honestly advertised. Booklets containing the rules and explanatory comments thereon are available by writing to the secretary of the council. The board of trustees has at the request of the council, given further impetus to the labors of the council by the following actions:

> That after July 1, 1930, advertising of proprietary remedies in the Journal will not be accepted unless the product and the advertising has been accepted by the council, except in such cases as existing contracts legally obligate the association to continue advertising copy until the conclusion of the contract. That the business manager be advised not to accept for exhibit in the commercial exhibit proprietary remedies which are not acceptable to the Council on Dental Therapeutics on and after 1931; and that after 1931 journals carrying advertising matter relative to products not acceptable to this council shall not be accepted as exhibitors.
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> That the editor of the Journal be requested not to accept for publication those papers presented to the Journal, which indorse or introduce a new theretofore unconsidered remedy until the council shall have examined the evidence submitted and published a preliminary report.

The intent of these resolutions is to aid manufacturers of worthy preparations against the almost predatory exploitation of dealers, of useless and unscientific preparations, in supplying the profession with honestly advertised products of therapeutic usefulness.

LABELING CANNED SWEET CORN

" Some States are known for distinctive packs of canned sweet corn," says V. B. Bonney, of the Federal Food and Drug Administration. " Maine style " sweet corn is prepared by crushing the grains to a creamy consistency. Such corn, packed outside Maine, is called " cream-style corn." " Maryland style " corn is prepared by cutting the kernels from the cob so as to leave them substantially whole. Such corn packed outside Maryland is called whole grain or whole kernel.

Certain varieties of sweet corn make such excellent packs that canners use the varietal name on the label. Some of the most popular of these varieties are Country Gentleman, Golden Bantam, Golden Giant, Improved Golden Bantam, Bantam Evergreen, and Charlevoix.

Some packers print on their labels the official grades established by the United States Department of Agriculture. Grade A (popularly known as Fancy) is the best quality, very young, tender corn, of bright color, with superior flavor, and practically free from defects. Grade B (frequently called Extra Standard) possesses the desirable characteristics of color, tenderness, flavor, and freedom from defects to a lesser, but reasonable degree. Grade C (Standard, so called) is corn in which the color may be dull, the flavor only fair, the kernels rather " doughy " and the presence of husk, cob, or silk distinctly noticeable. Off grade (or Substandard), of course, is still lower in desirability.

" Field or ' horse ' corn is sometimes canned," says Bonney. " Since field corn does not have the superior eating qualities of sweet corn, the pure food law requires that the label plainly declare the product to be field corn when such is the case. If starch is added to cream-style corn, it must be declared. Starch is never used in large quantities, however."

FLAX AND HEMP TWINE SIMPLIFIED SCHEDULE RECOMMENDED BY CONFERENCE

A general conference of manufacturers, distributors, and users of flax and hemp twines was held in New York City on February 15, 1932, to consider the simplification of these commodities. The tentative schedule for this meeting was prepared by a simplified practice committee of manufacturers, and was based on a survey of current variety made by the committee, with the cooperation of the division of simplified practice of the Bureau of Standards. The program was approved by the conference after a few minor changes were made, and if accepted by the industry, will be issued as a simplified practice recommendation.

The recommendation covers fine finished hemp twine, fine finished flax twine, and fine unfinished hemp twine. Four kinds of twine comprise fine finished hemp—AA Italian, AB Italian, B American, and BC American. Numbers, yardage, and breakage strength are specified for each, as well as a simplified schedule of put-ups; that is, weight of twine in balls, tubes, etc.

Fine unfinished flax twine is divided into first and second grade; the ply, yardage, and breaking strength is given for each grade.

Fine unfinished hemp twine is divided into two general descriptions, Italian and American. Each of these is subdivided into first and second grade. The ply, yardage, and breaking strength are included.

A common schedule of put-ups is given for the two kinds of unfinished flax and hemp twine.

The conference authorized the appointment of a standing committee of manufacturers, distributors, and users to sponsor the recommendation for the industry. If approved, the recommendation will go into effect one month following the Department of Commerce's announcement that adequate support has been received.

CERTIFICATION INSPECTION OF CALIFORNIA PRODUCE

Optional Certification and Inspection Service Has Proved to Be of Great Value to Fruit and Vegetable Industry of the State

By H. W. PETERSON[1]

The California department of agriculture, through its bureau of shipping point inspection, maintains an optional certification and inspection service which has proved to be of very great value to the fruit and vegetable industry.

This service is carried on in cooperation with the United States Department of Agriculture. Certificates of inspection are issued upon request to financially interested parties, which give the quality, condition and grade of the product at the time of the shipment. Such certificates are receivable as prima facie evidence in United States courts or in courts of the State of California.

Although the service is well established, we still have frequent inquiries from growers, shippers, buyers, and others asking how they may attain the maximum benefit that should result from the use of this service.

The use of a certificate depends largely upon the position of the applicant, depending on whether he be a grower, shipper, buyer, or broker. The discussion that follows explains the principal purposes of inspection and certification, and the benefits that may result from its use.

Through the use of established grades, the packer, grower, or shipper is able to correct errors in packing at the shipping point, rather than become involved in the difficulty of making adjustments at the receiving end. Carefully trained, reliable, and unbiased inspectors can be furnished to assist the applicant in packing the desired grade of product being shipped.

During recent years there has been a distinct attempt made by the greater part of the industry to improve the quality and pack of the products offered for shipment. In the fresh fruit industry the development of the pressure tests of pears for maturity and the general inclination of the growers to hold the fruits, such as apples, pears, and plums, until the proper degree of maturity is reached, has increased the palatability of these fruits. If these standards are maintained consistently, a general benefit to the industry will result.

In the vegetable industry also, recent years have brought improvements both in quality and pack. During the 1930–31 lettuce shipping season from Imperial Valley, approximately 60 per cent of the cars shipped were inspected and certified. A consistent effort was made by the packers to put up better and tighter packs. There was an unusually large acreage of lettuce, and the prices received were low. However, it was the general opinion of the members of the lettuce industry in that valley, that by using the inspection service and striving toward a U. S. No. 1 grade as much as possible, enough undesirable lettuce was culled to keep the already low price from becoming disastrous. The pack and quality of the lettuce was probably the most uniform and the best that had been put out any season, and in spite of the low prices, the number of rejections at the receiving end were few.

Unfortunately with lettuce, each season at the time the supplies are limited the quality is the poorest and prices are the highest. Accordingly, the quality that is packed is also lowered. Usually it is at such times, especially after slight increases in shipments, that reduction in prices follow, with consequent claims for adjustment in prices at destinations. In many cases if the packer even under these conditions would call for inspection certificates, with the assistance of the inspector, it would be possible to discard the poorest stock and put up a pack of at least fair quality.

From a grower's standpoint, a contract of sale based on grades, together with a certificate of inspection at time of delivery to the packing house, furnishes both grower and shipper a reliable document showing the actual condition of the product at the time of delivery.

In the above-mentioned case, the certificate is not only valuable to the grower as a basis of settlement, but as the inspector examines the product, he is able to note irregular conditions, such as certain types of decay which may cause severe losses in transit, and consequently warn the grower. He can also render other services to the grower, such as warning him when his product reaches the limit of the grade tolerance, or advise when vegetable containers are marked incorrectly.

Standard grades, together with a certificate of inspection, assist materially in making f. o. b. sales.

Formerly, the chief use of the inspection service was to issue certificates which were used as the basis of f. o. b. sales, but with the growth of the service its use has become more diverse. But this is still a highly important use of the service.

In most f. o. b. sales the buyer requires that a certificate be furnished with the bill of lading. The certificate gives the buyer an impartial report and an assurance that the quality of the product is up to the grade that he requires, even though he does not see the product packed.

In connection with f. o. b. selling, last year an association of shippers in Imperial Valley organized an auction company. Each night the cars packed by the shipper during the day were put up for sale at the auction room. Certificates of inspection were obtained on each car. The size, pack, quality, condition, and grade were ascertained from the certificate, and quoted in the auction company's catalogue. By this means buyers were able to select cars of known quality and offer bids accordingly. It was always clearly apparent that the best quality and pack brought the highest price. This fact had the effect of improving the general quality of the lettuce being shipped. Auction members, as well as others, would endeavor to put up the best pack and quality possible in order to compete favorably as to prices.

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[1] Field supervisor, bureau of shipping-point inspection, department of agriculture, State of California.

In the exportation of oranges, apples, and pears much of the selling is done on an f. o. b. basis. In this business the importers invariably demand certification when buying on an f. o. b. basis.

Standard grades and inspection serve as a strong advertising point with firms who advertise their brands. The inspection of the product is of great importance to those who, both as an advertising and sales policy, place their best brands only on lots that will grade U. S. No. 1 or 85 per cent U. S. No. 1 quality. Many regard a car that grades within 5 per cent of a U. S. No. 1 for all practical purposes almost equal to a car that meets the grade requirements. But most shippers who are jealous of the reputation of their brands will not place advertised labels on containers that show less than 85 per cent or 80 per cent U. S. No. 1 quality. In this State one well-known firm that handles a number of products has adopted the U. S. No. 1 grade as the basis of its best advertised brand, on four or five of the principal products shipped. Another organization that ships only celery advertises and sells its best brand as a U. S. No. 1.

Certificates of inspection are a valuable aid to the sales organizations of large firms in assisting them to sell carloads of known quality in desirable localities. Several large organizations have taken advantage of this use of the certificates. With fresh fruits the salesman can refer to the certificate and from it ascertain the degree of ripeness of fruit in order to know how far it may be shipped with reasonable safety. If it appears that a car of fruit, on account of advanced maturity, or the possibility of showing heavy decay, should be shipped to a near market, this can be done and a reasonably satisfactory delivery made.

Each season many cars of pears are placed in storage. They are carefully graded at the time they are packed. Later at the time they are to be shipped an inspection is made, and from the degree of firmness of the fruit, the shipper may determine whether the lot should be used for short or long shipment. In most cases this fruit is held in storage and exported as orders are received.

Since the recent freeze the demand for inspection of oranges has increased. Freezing damage of oranges is not readily determined from the external appearance of the orange. The most satisfactory way to find out the amount of damage is to cut a sample of the fruit. The shipper may have each lot inspected, and segregate the fruit according to the degree of damage done. By the certificate the sales organization learns of the condition of the various cars and delivers them accordingly. Lots which do not meet the requirements of the law are not certified. Shippers of lettuce, tomatoes, and other vegetables use the certificates as an aid to them in delivering the cars. Various receivers in the markets provide different types of the trade with supplies of produce. Shippers frequently have cars rejected especially on a low or falling market upon some pretext or other. In most of these cases acceptance can be forced by advising the receiver that the cars carry a certificate of inspection and meet the grade requirements.

In many instances shippers will make an allowance to the receiver without a thorough investigation regarding a complaint. Every shipper should remember that if his customer contests the grade given at shipping point he has the privilege of calling for an appeal inspection. In an appeal inspection a thorough examination of the contents of the car is made by inspectors of the Food Products Inspection Service of the United States Department of Agriculture, and the original certificate is sustained or reversed. When it is considered that during 1930 only one car was reversed as to grade for every 3,000 inspected, the chances are very much in favor of the shipping point certificate being sustained. The fact that shipping point certificates are acceptable as prima facie evidence in courts make it a valuable document in settling claims with carriers and others.

SIMPLIFIED SCHEDULE FOR FORGED TOOLS REVISED

The revised Simplified Practice Recommendation R17–31, Forged Tools, is now available in printed form from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a cost of 15 cents per copy.

On September 12, 1923, manufacturers of forged tools met in New York to consider a program of simplification for their industry. As a result of this meeting, followed by a general conference of all interests held February 11, 1924, the industry adopted a simplified practice recommendation, which became effective July 1, 1924. In 1925 the recommendation was reaffirmed, without change, by the industry's standing committee; in 1927 the scope of the recommendation was extended to include simplification of eye sizes; and in 1931 final action was taken on a tentative revision proposed in 1929.

Several items have been included in the revised recommendation so as to meet railroad requirements and other consumer demands. The tool-eye number has been incorporated in the list and is indicated opposite each item where it is part of the tool in question. In addition, a simplified list of lengths has been included, where applicable. The variety of forged tool items has been reduced from 665 to 431, and eye sizes from 120 to 10.

PLYWOOD STANDARD RELEASED

The Bureau of Standards announces the release of the Commercial Standard for Plywood, CS35–31, which covers grading rules for plywood of the commonly used hardwood species, together with eastern red cedar.

It is the belief of the industry that these standard grading specifications will clarify some of the misunderstandings that have been prevalent through the use of various grade rules so that furniture manufacturers, architects, and others may definitely specify their needs from universally recognized grades. The commercial standard specifies certain general requirements of workmanship, gluing, packing, etc., and the detail requirements of the face veneers required in the several grades for each species.

Copies of the pamphlet are available at 10 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C.

THE EFFECTS OF STANDARDIZATION IN BRITISH INDUSTRY

The Value of Standardization as a Remedy for Some of the Present Industrial Difficulties Discussed by Director of the British Standards Institution

By C. LE MAISTRE, *Director, British Standards Institution*[1]

The trade and industry of Great Britain are passing through such a tremendous crisis, so prolonged and so far reaching in its effects, that it behooves each one of us in our various spheres of activity to maintain the utmost confidence in the nation's ability successfully to meet and overcome the difficulties confronting it, however alarming they may appear to be. The spirit of cooperation so notably on the increase in industry everywhere, and the unity of action which comes from such cooperation, are immensely constructive factors, and should go far to help us in finding a remedy for at any rate some of our industrial difficulties. My purpose is to endeavor to show, in some small measure, the contribution which standardization can make toward the solution of the problem by the introduction of greater economy in manufacture and distribution.

As in most countries, so in Great Britain, standardization began in private firms and then passed on to being carried out by entire industries. So interdependent and interlocked, however, are the various industries of the country, that experience has shown that for the work to reach its highest efficiency and so confer the greatest benefit on the whole community, it has to be carried out nationally under some sort of central coordinating influence with, of course, a certain amount of properly organized decentralization. Obviously there must be some authoritative, impartial organization, not dependent upon any one of the interests concerned, able to call all those interests together, to provide the opportunity of a satisfactory agreement being reached. The added authority which Government support gives is essential. Then again, a national center is necessary in order to reduce overlapping and duplication to a minimum and so economize effort. It also avoids the difficulty of setting lines of demarcation in the work, and assists Government departments which then have to deal with an organization only, and have not to decide to which organization they have to send any requests for standardization.

Again, as finance is an important aspect, naturally a national organization is bound to receive greater financial support from industry, as there is no question of having to divide contributions, and the funds can be more economically expended owing to the entire absence of any overlapping. For these and many other reasons the engineers of the country some 30 years ago decided to form a standards organization. They had the foresight to realize that it must be impartial, and independent of Government control, yet have the fullest Government support in order to give that very necessary authority to which I have alluded; and so the British Engineering Standards Committee, now the British Standards Institution, came into being in 1901. It has gradually gained to a most marked degree the confidence of industry and, under its present title, its work is growing by leaps and bounds.

Whilst a great number of people are converted to the idea and value of industrial standardization, and are quite conversant with the principles upon which the work is carried on, there are still certain critics who, not being familiar with our procedure, fear that standardization is going too far and that unless a halt is called the country will be overstandardized. There is, certainly, always this danger unless the movement is most carefully watched and wisely guided through the many difficulties inherent in such work. Safeguards have to be applied to prevent the too enthusiastic advocates from forcing on the community undesirable and unwise standards. So long, however, as the community interest of purchaser and producer is strictly maintained, and so long as provision is made for periodic review and revision whenever these are desirable, there should be no fear of overstandardization nor of interference with individual initiative and invention. Again, the work must be protected from too rapid change or from change merely for the sake of change, as the recommendation must have some measure of permanence if they are to obtain the confidence of industry.

As a general principle, it is of course desirable that the specification should be limited to recommendations as to performance and not, unless absolutely necessary, touch upon the actual process of manufacture. This allows the producer as much freedom as possible in his methods of meeting the requirements and also widens the market to the consumer. After 30 years' experience in drawing up specifications the form has, to a certain extent, naturally itself become standardized, though without any very hard and fast rules being laid down.

The specifications include the technical provisions necessary for the supply of the material or article referred to and they do not attempt to comprise all the necessary provisions of a contract; great care is exercised to preclude any matters not essential to the specification and which might tend to interfere with future design. Tests are included where they are requisite to establish the standard of quality. Contract clauses of a nontechnical nature are deprecated, though, on the other hand, coordination of such clauses would have many advantages. If, however, a fully representative committee decide that in the case of some piece of apparatus for common everyday use the design has practically reached finality, and desire that the community as a whole shall reap the fullest benefit from standardization and quantity production, it may be found desirable completely to control interchangeability of the apparatus or commodity. The technical committee is a standing committee, and so long as it watches the industrial situation carefully and reviews it periodically and frequently, there is nothing fundamentally wrong with crystallization.

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[1] Abstract of address recently delivered before the Royal Society of Arts in London.

People in Great Britain sometimes think that American standardization is the ideal we should aim at, and they are inclined to infer that we are very much behindhand. Such criticisms are surely based on lack of knowledge of the entirely different conditions existing in the two countries. It is a question as to whether the American ideal is altogether suitable for us to aim at; even in America they are beginning to think the work needs some review, and a good deal of coordination. It must be remembered that America is a commonwealth of nations trading freely between themselves with an almost illimitable home market. Great Britain, on the other hand, is a nation exporting to many different countries, each of which has very different requirements rendered necessary, no doubt, by climatic and other local conditions. If America has little to fear from competition, this country is hard up against it all the time, often competing against low-paid foreign labor, sometimes financed by our own capital.

It is no doubt true that standardization in America has progressed further in individual firms than in any other country. Overlapping, however, has become stupendous, and the American Standards Association has been formed to try to straighten things out. It is interesting to notice that quite a number of persons of high standing in America are beginning to raise their voices against overstandardization. It is true, I think, that these criticisms are directed more against the standardized article or the appliance itself than against anything else.

Whilst possessing no legislative authority nor yet subject to any Government control, the British Standards Institution has gained to a notable degree the confidence of industry so that manufacturers find themselves constrained to make use of the British standard specifications, and the purchaser, although free to order what he likes, in the great majority of cases accepts the institution's recommendations. The result has been the saving of thousands of pounds a year to industry. One electrical cable firm, for instance, through the issue of a single British standard specification, admits having saved £500 a year, due to the decrease in the number of sizes of copper wire it is obliged to stock for the making of its electric cables. If one firm is able to liberate £10,000 which otherwise would have been locked up in one item of their stock, how much industry as a whole must have benefited.

Another notable example is that of the cement industry, which, 25 or 30 years ago, was in a chaotic condition. The cement makers, realizing that something must be done, cooperated as an industry with the large users of cement, and produced, under the ægis of our organization, the British standard specification for Portland cement, issued in 1904. The industry has been reorganized, and since then has steadily progressed and become one of the great modernized industries of the country, all based on the British standards.

It is to be regretted that there are still many trades and industries outside of the engineering and allied industries, which so far have given but little attention to this important matter. It is true that the work of the institution is not at all widely known, and industries outside those already affiliated with it may even hardly know of its existence, and certainly do not realize that they have at hand an organization which, if made use of in the proper way, might immensely benefit their position.

In the preparation of these specifications it has been found necessary to secure technical data upon which to base recommendations. This has often entailed either testing or investigation and research by an independent authority. The institution does not, as a rule, carry out this work, but it relies on the cooperation and assistance of the national physical laboratory and the various research associations which are under the Department of Scientific and Industrial Research. The work, however, of preparing industrial standards, as is generally recognized, necessitates a different outlook from the work of research. The fact that the practical recommendations based on research are so often prepared and issued by this institution has quite definite advantages. Notably has this been the case in the question of establishing a standard method for the sampling and analysis of coal in which this association has had the fullest cooperation of the Fuel Research Board, who, in the most public-spirited manner, placed all their information and the results of several years' research work entirely at the disposal of the committees of the institution.

The question of a commercial specification for the sampling and analysis of coal, which has recently been issued, probably represents one of the most helpful pieces of work which this institution has ever accomplished for industry. A delegation, headed by the Minister of Mines, recently visited Scandinavia, where they had been to see what could be done to improve our coal export trade with those countries. The white paper presented to Parliament showed the urgent necessity of some standard method for the sampling and analysis of coal, which would be acceptable to the foreign purchasers of British coal.

For the past three years this institution has been bending every effort to find a solution of this problem, and although the difficulties have sometimes been almost insuperable—in fact, at times the task has appeared hopeless—success has been attained, so absolute was the necessity of finding a solution. And so, for the first time in the history of the coal trade, a British standard specification drawn up by the industry, quite apart from any Government control, giving standards for everyday commercial use, has been agreed upon. The foreign buyers of British coal have been consulted during the process, and their criticisms have been given the most careful consideration.

As the industrialists of this country more fully grasp the fact that this national organization, entirely impartial and independent of Government control, actually exists in their very midst, and that its services are at their entire disposal, they will make more use of it with increasing benefit in the home trade and in foreign markets. Indeed, there is scarcely a firm producing either materials or commodities which can afford not to be in touch with this work.

UNIFORMITY IN REGULATING NEW JERSEY TRAFFIC ASSURED

State Laws Relating to Safety Gives Equal Consideration to Rights of Motorists and Pedestrians

By Harold G. Hoffman[1]

Like most States, New Jersey has its distinctive and individual problems growing out of motor-vehicle use. While relatively small in geographic area, the State has a motor-vehicle registration approaching the 1,000,000 mark. That means a high concentration of automobiles in respect to both area and population.

The State's geographic location gives it several other conditions peculiar to itself. For instance, its seashore resorts attract thousands of motor tourists to New Jersey. Inland towns which are rich in historic and other forms of interest also have a wide appeal to those living outside the State. Still another condition that serves to multiply traffic in New Jersey, and one which grows out of the State's geographic position, is that its highways are the connecting link between large centers of population such as New York, Philadelphia, Boston, Baltimore, Washington, and other points along the Atlantic seaboard.

New Jersey has tried to meet the requirements of its vast volume of traffic so much of which originates outside its borders, with highways designed to carry a heavy burden of greatly varied traffic. Beyond that, it seeks to regulate that traffic with the safest and, at the same time, most liberal rules that can be devised. The varied character of the traffic traversing New Jersey highways, in respect to its origin, clearly dictates that traffic regulations shall be uniform to the greatest extent possible. Thus, the State motor-vehicle department operates under a basic law which gives it the widest jurisdiction.

Only in purely local traffic affairs, such as the designation of parking spaces, 1-way streets, and the like is the jurisdiction of the State abridged by rights conferred upon municipal agencies. Even in such instances, the approval of the motor-vehicle commissioner is required upon a majority of traffic-control ordinances adopted by municipalities.

This limitation—under which the smaller political entity, the city or town, is protected by the right of appeal to the State supreme court from decisions of the motor-vehicle department—is one with the wisdom of which very few disagree. Substantially, the entire State recognizes the solution of its peculiar traffic problem as requiring the guiding hand of a central agency. In bringing uniformity to every traffic rule and regulation effective throughout the State, the motor-vehicle department and the State traffic commission are working hand in hand.

Safety, naturally, is the first objective of New Jersey's motor-vehicle program. However, it is recognized that this is not the only consideration. The fullest, freest, and most effective use of motor vehicles demands that the rules governing their operation shall not be violently prohibitive, but as liberal as may be consistent with the prevention of accidents.

Through its driver's license law, the State exercises the power of selecting those of its citizens upon whom it confers the privilege of using its highways. In this activity, New Jersey recognizes its possession of a powerful check upon those unfit to drive. It demands that every applicant for a license shall demonstrate his qualifications through a practical driving examination and a mental test based upon the motor vehicle act and the traffic act.

The driver's license law continues always, as it begins, to be a check upon the individuals. Optional revocation at the discretion of the motor-vehicle department for many offenses and mandatory withdrawal of the driving privilege for some is prescribed in the basic law governing automobile use. The power thus conferred is used most rigorously in the case of drunken drivers. Without exception in cases of this character, the permit is revoked. In less serious offenses, the penalty is applied as a last resort when it is evident no other will prove effective.

Laws applying to the actual operation of vehicles are developed in New Jersey with the thought of making them as few, simple, and liberal as possible and, of course, uniform. The State permits a maximum speed of 40 miles an hour over its highways, with exceptions to that regulation stated clearly and succinctly. Business and residential district speeds are specified at 15 and 20 miles an hour. The law states that it shall be prima facie unlawful to exceed any of the specific speed limits.

New Jersey officials are aware that the maximum speed limit differs from that of many other States; that some are more liberal, others less so. Their attitude on the subject, broadly speaking, is that the final word has not yet been spoken; that time may modify any or all of the various opinions now being entertained with regard to speed regulations.

The philosophy dictating New Jersey's attitude on speed of traffic flow is that it is conditioned by many other factors than the maximum limit. A through highway, or boulevard, on which a speed of 40 miles an hour is made possible by establishing unqualified right of way for vehicles using it will permit an average speed perhaps higher than could be made with no maximum limit, but with the highway unprotected by " stop " signs at intersecting roads. In the matter of such signs, New Jersey has embarked upon a policy which it regards as of vast importance to the task of moving traffic swiftly, smoothly, and safely. It is selecting boulevards throughout the State—roads that serve the greatest volume of traffic in their territories—and along these it is erecting the barricade of " stop " signs. Elsewhere it is rigidly prescribing the use of this traffic device which has been so abused over many years. The same policy applies to electric traffic signals, a vast excess of which has adversely affected New Jersey traffic movement in the past.

Signs and signals are intended to strike a balance in road use, not to unbalance it to a degree that makes them outright obstructions.

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[1] Commissioner of motor vehicles, State of New Jersey.

An important phase of New Jersey's direct attack on the highway-safety program is that which seeks the exact causes of accidents. Determination of the cause is the first step in effecting the remedy. Accident data are tabulated and carefully analyzed in every single instance. The result of this study of mishaps is to indicate in New Jersey, as elsewhere, that the personal element is the most important factor in accidents. It is recognized that the personal equation is susceptible to legal restraint only to a limited degree, and all laws governing this element are evolved with the idea of obtaining a maximum result in this direction.

However, many other causes are shown to contribute to the accident situation. Some of them are purely physical, such as deficiencies in highway width, visibility, and the like. The highway and motor-vehicle departments together are capable of remedying these.

The condition of the vehicle is another common factor in accidents. New Jersey now has a law requiring compulsory mechanical inspection of vehicles as to lights, brakes, steering, and general safety equipment. With no sense of intruding punitively into the affairs of the individual car owner, the motor-vehicle department thinks his own welfare and that of the public at large is best served by requiring all cars to pass a safety examination.

The theory basing this is that modern traffic conditions must bring new considerations into the safety picture. Once it was sufficient, perhaps, merely to specify the character of safety equipment a car must possess along with standards of condition in which such equipment must be maintained. Traffic to-day moves at a pace and in a volume that demands an official inspection of the individual car to see that it meets legal specifications of this character.

The broad view governing motor-vehicle use in New Jersey in so far as the motor-vehicle department is concerned is that the department exists as an agency not to harass motorists or pedestrians but to serve them in every way possible.

GLASS CONTAINERS FOR MAYONNAISE AND KINDRED PRODUCTS NOW IN EFFECT

Simplified practice recommendation No. R131–32, covering glass containers for mayonnaise and kindred products, which was approved at a general conference of representatives of the industry on June 30, 1931, is now in effect, a sufficient number of signed acceptances to the recommendation having been received by the Bureau of Standards.

For several years it has been the belief of the Mayonnaise Manufacturers Association that the simplification of jars (capacities) would result not only in fewer sizes, but in less confusion and healthier competition. In a survey made by the foodstuffs division of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce in 1928, it was observed that at least 25 different sizes of containers were being used in marketing mayonnaise, salad dressing, and sandwich spread. The survey developed the further information that only six of these sizes were required for the distribution of 85 per cent of the total production. It appeared also that more than 70 per cent of the sizes in which mayonnaise jars were manufactured could easily be dispensed with.

In consequence, the Mayonnaise Manufacturers Association requested the division of simplified practice of the Bureau of Standards to assist in conducting a survey among the manufacturers of mayonnaise products to ascertain their views with respect to a proposed simplification of container sizes. Replies were received from more than 130 firms, the great majority of which indicated their readiness to support such a program. Accordingly, a general conference of all interests was held on June 30, 1931.

As approved by the general conference, and later accepted by the trade, simplified practice recommendation No. R131–32 provides for five stock sizes of glass containers, based on liquid capacity. They are the 3-fluid ounce; the one-half pint, or 8-fluid ounce; the pint; the quart; and the gallon. The recommendation is concerned with only capacities, and does not affect the distinctive shapes of containers in use by the various manufacturers. The program became effective January 1, 1932, with a transitional period of six months allowed for the clearance of all stocks of eliminated varieties of containers.

In discussing the possibilities of the recommendation, a representative of the industry said that the greatest benefits to be gained through the general adoption of this recommendation are better marketing methods, and the elimination of confusion, in both production and distribution. In brief, this simplification program, if effectively applied, should result in savings and benefits all along the line from the container manufacturer to the consumer of mayonnaise and kindred products. He pointed out, however, that the realization of the economies and advantages inherent in this program is definitely dependent upon the whole-hearted voluntary cooperation of all elements of the industry in the matter of adherence to the simplified list of sizes.

LAUNDRY MACHINERY

At a meeting of manufacturers of machinery used in commercial laundries there were drawn up tentative programs covering the simplification of washers, tumblers, ironers, and extractors. It was suggested by the members of the conference that the proposed programs be submitted to general conferences of all interests, to be held in conjunction with a meeting of the Laundry and Cleaners Allied Trades Association, in Washington, D. C., in May, 1932.

While there are available no figures indicating the reduction in variety which would result from adoption of the proposed recommendations, the industry believes that concentration of production and demand upon a simplified list of sizes and types of these machines would make it possible to eliminate certain of the avoidable wastes which have existed because of the excessive variety of the machines themselves, and parts therefor.

NORWEGIAN STANDARDIZATION COMMITTEE

Committee Has Developed 226 Standards Since it Was Created in 1923

By Kaare Heiberg[1]

During and after the World War there was a constantly growing need for a central standardization organization in Norway which could bring together the more or less scattered work already started in different branches of Norway's industries. The credit for realizing such a plan belongs to the Norges Industriforbund, on whose initiative an independent standardization committee was started in 1923, consisting of representatives from the following larger industrial organizations, technical and social societies, Government departments, municipalities, and scientific institutions; Departments of Labor, Commerce, and Defense; agricultural colleges, labor associations, commercial organizations, industrial organizations, shipowners, farmers, civil engineers, and insurance companies; this committee consists of 53 members, representing both producers, consumers, and scientists.

The method of the committee is similar to other foreign committees. Its council decides which problem shall be taken up and appoints technical subcommittees, either for the different branches or the individual problems, the subcommittees submitting the proposals for standardization. As far as possible all groups of people (producers, dealers, consumers, etc.) are to be represented in these subcommittees. Following approval by the council, the proposals for standardization are published and made available to the public for comments and criticisms. These comments and criticisms are reviewed by the proper subcommittee before the recommendation is submitted to the council for approval as a Norwegian standard.

Members of the various subcommittees receive no pay, nor traveling expenses, and the revenue received by the central standardization organization is expended for printing and for participation in the international cooperative work of this kind.

In the formulating of its standards, the Norwegian Standardization Committee does not only take into consideration present Norwegian practices but endeavors, where not in conflict with Norwegian interests, to conform to the standards of other countries. For this purpose the committee has taken an active part in the international work of standardization from the beginning, and has been a member of the International Federation of National Standardizing Associations ever since it was formed.

Originally the Norwegian Standardization Committee was appointed for the purpose of industrial standardization, but later the scope of the work was enlarged so as to include nonindustrial standardization activities, such as relating to agriculture and fisheries. At the end of the seventh year of its existence the committee had approved 226 standards.

Norwegian standards are now being used to an increasing extent. This is especially true with regard to standards for packing and paper sizes. In standardizing paper sizes, the standards used are those already in effect in several countries—the so-called metric paper sizes. These have now been accepted officially everywhere in the Government service, in a number of the municipalities, and private industries. Considerable advantages have been gained through the adoption of these standards.

All standards are published in the weekly magazine Norges Industri. From time to time new standards adopted by similar foreign committees, and other interests, are inserted. Once a year the committee publishes its annual report and an index covering the standardization pamphlets. The report contains a résumé of the work done generally and by the various subcommittees, as well as a list of the members who comprise the respective committees.

The standards before the committee at the present time concern quality and trial regulations for iron and steel, and for ordinary building activity. The committee is also working on standardization of tools, standards for axles and wheels for horse-drawn vehicles, and for agricultural implements. Of special interest is the work which has been started for standardization of qualities and classes of agricultural products.

With increased knowledge of the importance of standardization and the possibilities for the different industries, the committee is constantly receiving requests for the development of new standards. Standardization work in Norway is therefore assured of greater development.

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[1] General secretary, Norges Industriforbunds Standardization Committee.

COTTON CLOTH FOR RUBBER AND PYROXYLIN COATING

The printed pamphlet entitled "Cotton Cloth for Rubber and Pyroxylin Coating, Commercial Standard CS32–31," has been released and was distributed to acceptors of record on February 10, 1932.

The specification and requirements for this standard cover in a general way, quality, width, thread count per inch, unit weight, and tensile strength, and more specifically the length of cut, major and minor defects, the amount of sizing allowed, injurious chemicals, and methods of inspection and test. The standard also includes a list of acceptors and a roster of the standing committee that was appointed to consider any comment or suggestions relative to the standard in order that it may be kept in harmony with the needs of the industry.

Copies of the publication may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents (stamps not accepted).

ENGINEERING INSPECTION OF AIRPLANE STRUCTURES

Tests Applied by Department of Commerce to Determine Airworthiness of Manufacturer's Models

By Richard C. Gazley, *Aeronautics Branch, Department of Commerce*

In order to obtain an approved type certificate for an airplane the manufacturer is required to submit to the Department of Commerce a complete set of drawings, technical data, and stress analysis.

A close inspection of the airplane is conducted by the engineering inspection to determine whether it meets the airworthiness requirements.

In addition to the inspection, the airplane is also tested under static loads, designed to ascertain the strength of stationary surfaces and parts and the strength and ease of operation of moving parts of the aircraft in order to determine its ability to operate under the loading conditions for which it was designed. These tests are conducted by the manufacturer in the presence of a Department of Commerce inspector.

Generally these tests include wing-rib static tests, control-surface tests, control-system tests, and pressure tests on the fuel and oil tanks. However, the department may require additional tests on different parts of the aircraft where the design or data indicates the necessity. As an illustration of the procedure followed in static tests, the wing ribs are loaded with sand bags or lead shot, the amount varying with the aircraft, in order to test their strength. The strength of the landing gear may be tested, when it is thought necessary, by actually dropping the aircraft from a prescribed height. The control surfaces, such as ailerons, rudder, elevators, and stabilizers, are tested both for strength and ease of operation by placing weights on them and then working the controls. The control system, which includes the cables and levers which move the surface, is also tested for strength and ease of operation, special care being taken to ascertain that there is no jamming, excessive friction, or undue deflection.

Reports of these tests are made by the manufacturer to the department and are signed by the inspector who witnessed them. The results of the tests, as submitted to the department, describe fully the method of loading, the load-distribution curves, deflection readings or curves, and include a log of the test describing all failures or repairs made during the tests. Photographs of all failures in structure and a photograph of suitable size showing the test set-up and the points from which deflections were measured are inclosed.

In particular cases where the structure can not be satisfactorily analyzed and static tests are submitted as the only proof of compliance with the strength requirements, such static tests are carried to destruction, or to 150 per cent of the design load, and samples of the major structural parts are included with the main test report.

An inspection is subsequently made to determine that the workmanship and materials incorporated in the airplane are such as to produce an air-worthy machine.

The airplane then undergoes flight tests of such a nature as to demonstrate its balance, stability, maneuverability, and general flying and taxiing characteristics. Prior to, or at the time of presentation of an airplane to the Aeronautics Branch for flight tests, the manufacturer submits to the department inspector designated to make the tests, a detailed report of the manufacturer's flight tests on the particular airplane involved. The report submitted is signed by the manufacturer's test pilot and shows that the aircraft has been fully test flown, including all the required maneuvers, such as tests for longitudinal, lateral, and directional balance, and tests for stability. If the flight tests given by the Aeronautics Branch inspector are successfully accomplished, the airplane will be approved for license. If, in addition, suitable manufacturing facilities are in evidence, and the manufacturer so desires, an approved type certificate will be issued.

In the event an approved type certificate is desired, the inspector also conducts an examination of the factory in order to determine whether it has the facilities to produce aircraft in quantities. He investigates the efficiency of the personnel, the equipment available, whether or not the factory is equipped for exact duplication of parts and assemblies, the factory-inspection system employed, and the factory's source of supplies. He also ascertains the dependability of the organization, its attitude toward quantity and quality production, and the shop practices employed. The primary object of this inspection is to determine whether the factory can produce aircraft in large quantities of the same standard and quality as that embodied in the aircraft submitted for inspection if an approved type certificate is issued.

BRITISH STANDARD ISSUED FOR STREET LIGHTING

The British Standards Institution has issued a revision of its specification (No. 307–1931), dealing with street lighting, which was originally promulgated in 1927.

The revision has a number of new definitions, but there is no change in the classification of street lighting installations, nor in the basis of minimum rated mean test-point horizontal illumination. More complete information is to be supplied both by parties inviting bids for street lighting and by prospective bidders.

In regard to the question of glare, it was found that even the simplified method of assessing glare, given in the 1927 edition of the specification, was considered by many to be too involved and was not being used. No numerical expression of glare has, therefore, been included in the revision, but guidance is offered as to the means by which glare may be mitigated.

GRADING MILK

United States Public Health Service Sets Up Model Ordinance Used in Eight States

By William B. Duryee[1]

The problems that immediately arise under a discussion of grades and standards for milk are so numerous both in principle and in detail as to preclude the possibility of fair presentation in an article of this type. There is little uniformity in State regulations on the subject and yet all States, except two, have legislation governing some phase of the dairy industry.

The establishment of grades and standards for milk, together with an effective control system, is essential to the welfare of the producer. The only way by which the producer of milk can develop the sale of his product is through the establishment of quality in that product and the ability to convince the public that it is a product in which confidence may be placed. Through the establishment of standards which serve to prevent the marketing of milk of substandard quality, the producer has an opportunity to push the sale of his product on the basis of its inspection by a disinterested and official organization.

The value of grades to the distributor is generally accepted. It enables him to purchase milk on a quality basis from producers and to sell the better grades at correspondingly higher prices to discriminating consumers. The distribution of milk on the basis of grades is a stabilizing influence in milk production and consumption, and it is unquestionably helpful to the distributor of milk wherever an effective grading system is operative.

To consumers, grades of milk can be made popular in so far as the system itself is concerned. It is essential, however, that there be public confidence in the grades that are placed upon the milk bottle caps if consumer confidence is to be maintained.

There is an earnest group of men who sincerely doubt the value of grades for milk. This group has succeeded in bringing about a clearer conception of milk quality and in preventing enthusiasts from running wild on the subject of grades. They call attention to the foibles in many systems of milk inspection and grading, especially to those directed more along the lines of equipment than in the quality of the product itself. The argument is advanced, for example, that there is no reason for academic requirements as to the number of windows in a stable, since that would probably have no more effect upon the quality of the product than would the number of windows in a kitchen upon the quality of the food produced in that kitchen. There is also the argument against allowing a bacteria count larger than the stated maximum to place the milk in an unsafe category, whereas the milk that shows a smaller number of bacteria is considered safe.

The critics of the grading system also point to the tremendous diversity of regulations prevailing throughout the country as establishing the doubtfulness of all such regulations. Attention is directed to the fact that milk considered unsafe in one State is considered safe in another State, and the people in that State drink the milk without any ill effects.

A survey of the situation throughout the country shows ample grounds for this critical attitude toward grades and standards. About 10 per cent of all major cities in the country prohibit the sale of raw milk other than certified, presumably on the basis of its being unsafe, while 90 per cent continued to permit raw milk to be marketed. Fourteen States have defined grades of milk and 31 States have defined adulteration by law. Twenty-seven States require that milk must be free from colostrum and must not be sold 15 days before or 5 days after calving. Fifteen States limit bacterial counts and 15 require that all milk sold must be from cows free from tuberculosis. Fourteen States have regulations regarding light and ventilation in barns and 17 States require a separate milk house.

Four States require a barn score to be made of the farmers' premises. In 16 States there are regulations as to cooling of milk. Eight of these specify a maximum of 50°. The balance have higher temperature requirements, extending to 70°. This regulation usually states that the milk shall be cooled to this temperature after milking and kept at that temperature, or below, until delivered to the collecting station or the bottling plant. There are 10 different definitions of pasteurization in the various States, the principal differences being in regard to temperatures of heating and cooling.

In the effort to secure some national uniformity in regard to milk, the United States Public Health Service has set up a so-called model ordinance which has been put into operation in eight States, either as recommended by the Public Health Service or with some minor modifications. Many States do not agree with the grading principles laid down by the Public Health Service and will be very slow to adopt these standards for that reason.

It is, of course, impossible to give any details in regard to plans in effect in the States of the Union in this paper, but I wish to outline the major points in the milk regulations of two States which are on opposite sides of the continent geographically and which have systems which appear to be working satisfactorily for the conditions prevailing in those Commonwealths.

The California plan[2] of milk control has attracted nation-wide attention, and is frequently referred to by those qualified to judge as one of the best systems in the country. Milk in California is classified as "Certified," "Guaranteed raw," "Grade A raw," "Grade A pasteurized," and "Grade B pasteurized." While the control of milk standards is vested in the California Department of Agriculture, the grading of milk is permitted by law only where produced and distributed under the supervision of a local milk-inspecting department operating as a part of the local health department, which shall include in its organization at least one regularly licensed physician and shall provide for field inspections of dairies and milk plants, veterinary inspection of all dairy cattle and chemical and bacterial examination of the product. Such local departments become operative only after approval by the State department of agriculture. It is not only necessary for the local departments to have proper equipment in personnel and apparatus, but it is also required that the work be conducted in such a manner as will meet the State standard of efficiency, thus insuring uniformity throughout the State.

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[1] Secretary of agriculture, State of New Jersey.

[2] See Commercial Standards Monthly, issue of July, 1931.

Beginning in 1923 there were five local departments cooperating with the State department of agriculture and this list had grown to 72 in 1930. A number of these local departments extend over entire counties and several to groups of cities, thereby extending the benefits of a graded milk supply to 580 cities and towns in California, the population of which consumes over 96 per cent of all the market milk sold in the State. The fact that most of the work in milk control is being done by the municipalities is shown by the number of men who are in the California Department of Agriculture and are concerned with this work. Only three full-time market-milk specialists maintain the supervision of 72 local departments now in existence and render assistance in organization work in other communities desiring this service.

The central office conducts a surprise system of inspection to determine the effectiveness of the local health departments and the quality of milk being sold. Samples of milk are taken and studied on the basis of the United States official milk score card, which allows 35 per cent for bacterial analysis, 15 per cent for flavor and odor, 10 per cent for sediment, 15 per cent for butterfat content, 15 per cent for solids not fat, 5 per cent for acidity, and 5 per cent for bottle and cap, making a total of 100 per cent.

Another type of a milk regulation law is in effect in Connecticut that provides for a milk regulation board consisting of the commissioner of health, the commissioner of agriculture, the commissioner of domestic animals, and dairy and food commissioner, and two qualified electors of the State who are actively engaged in the production of milk. This regulation board drafts rules and regulations for the carrying out of the act relating to milk control and serves as a policy board in relation to the whole subject. The enforcement is administered by the dairy and food commissioner of Connecticut. In addition to a law specifying minimum standards, there are grades provided which include "certified milk," "Grade A raw milk and cream" and "Grade A pasteurized milk and cream." While other grades are permitted, they must comply with the standards set up in the minimum code.

The Connecticut plan is recommended, not only because it is working effectively but because it brings into the regulation of the milk supply both agricultural and health organizations on a state-wide basis, and the preponderance of influence on the milk regulation board lies with the production side.

AMERICAN ROAD BUILDERS' ASSOCIATION HOLDS ANNUAL MEETING

Standardization of highway construction and maintenance is approached through establishing current practice in highway activities. One of the most potent influences in this process of establishing current practice is the annual convention and road show of the American Road Builders' Association.

At the twenty-ninth annual meeting held this year in Detroit during the week of January 11, State, county, and city highway officials, contractors, engineers, commercial highway users and others, totaling 22,600, attended the convention sessions and inspected the road and street equipment and materials on display. At the 24 convention sessions there were 70 technical reports and papers all of which dealt with current practice. These reports will be published later on by the association.

In commenting on the reports presented, the Engineering News-Record said:

> The coverage leaves little more to be said of current practice in road surfacing. These reports on construction mark the high spot in the work of the association committees for 1931. In particular, the census and appraisal of equipment for low-cost road construction are the most complete ever recorded.

The reports were sponsored by the several divisions of the association and represent the results of a year's work by the various committees. Special effort was directed to prevent unnecessary duplication of work being done by other associations, and 15 of the reports were joint efforts by the American Road Builders' Association with other organizations interested in road building.

CLINICAL THERMOMETERS

A widespread desire on the part of manufacturers of clinical thermometers to secure coordination between the commercial standard and regulations covering clinical thermometers as enforced by a few States and municipalities, resulted in a meeting held for this purpose on January 12, 1932. The States of Michigan and Connecticut and the city of New York were represented at this meeting, a representative of Massachusetts being unable to attend. The resulting draft of a revision of the present commercial standard for clinical thermometers has been circulated to the industry for acceptance.

STANDARD FOR CEDAR CLOSET LINING REAFFIRMED

The commercial standard for Aromatic Red Cedar Closet Lining, CS26–30, has been reaffirmed, without change, for another year ending October 1, 1932.

This course was pursued by the standing committee after considering the results of an adherence survey undertaken in cooperation with the manufacturers of this product which indicated adherence of 83 per cent based on the unweighted averages of nine manufacturers.

It will be recalled that this standard embraces the minimum requirements for aromatic red cedar closet lining covering sizes, permissible defects, and requisite heartwood which shall be not less than 75 per cent.

STANDARD RAIL

The Pennsylvania Railroad Adopts a New Rail Standard on Main-Line Track

By T. J. Skillman[1]

On May 16, 1831, one hundred years ago, there arrived in Philadelphia from England the first T rails ever produced. These rails were rolled of iron, weighed 36 pounds to the yard and measured 3½ inches in height and 3¼ inches at the base. They were laid in track of the Camden & Amboy Railroad, which line is in operation to-day as part of the New York division of the Pennsylvania Railroad.

Since the above date the trend of railroading has been toward increased capacity of lading of freight cars, increased weight of passenger equipment, increased length of trains in both branches of service, with steadily advancing speeds, and larger sections of different types of rail have been used from time to time to meet these conditions.

This year the Pennsylvania Railroad has put in service a new rail section weighing 152 pounds to the yard, 8 inches in height and 6¾ inches at base, which is heavier and stronger than any heretofore in regular use on any railroad.

The new rail, both design and chemical composition, has been worked out by a committee of representatives of the United States Steel Corporation, the Bethlehem Steel Co., and the Pennsylvania Railroad.

They set for their aim a rail design that would meet the requirement of sustaining 100,000-pound axle loads at a speed of 100 miles per hour, as compared with maximum present requirements of 80,000-pound axle loads at a speed of 80 miles per hour. The new rail is 1⅜ inches higher than the present 130-pound section and possesses approximately 75 per cent greater stiffness.

The deficiencies in splicing, causing rail to batter and make poor riding track, were met by utilizing the greater fishing space provided in the higher web of the new rail. This has made it possible to design a simpler but more effective form of splice, which results in a much improved rail joint. Features of design have been introduced which produce greater vertical stiffness as well as lateral resiliency. The latter makes it possible to take up the wear and tear that occurs between the underside of the head of the rail and the top of the splice.

The 130-pound standard rail section, used during the past 15 years, has been revised to accord with the principles of the 152-pound rail. The result has been to add 22 per cent to the stiffness of the rail, with an increase of only 1 pound per yard in weight. This new 131-pound section will hereafter be the standard on main-line track, except where extraordinary conditions of traffic require the 152-pound section.

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[1] The Pennsylvania Railroad, Philadelphia, Pa.

AUSTRIAN STANDARDS COMMITTEE

Standardization in Austria Places Particular Emphasis on Simplification

By Dr. Jaro Tomaides

The Austrian standards committee, Österreicher Normenauschass für Industrie und Gewerber, established in 1920 on the initiative of the National Society for Austrian Industry and the Austrian Union of German Engineers, functions as the central Austrian standards-making body.

The Ö. N. I. G., whose 800 members are representative of various Austrian associations and professional societies, is directed by a main committee of 18 members, which has for its chief function the control of the relationships of each technical committee with other committees having fields of work which may overlap, or have other interrelationships requiring coordination or provision for intercommittee conferences.

The work of preparing standards is carried on by technical committees, whose membership, for the facilitation of work, is generally limited from 8 to 10 persons. A draft is developed by a working committee of 3 or 4 men.

Draft standards are published for a period varying from two months to a year, for public examination and criticism. Each standard submitted has its own editorial committee, the chairman of which meets with the technical committee which prepared the standard. This chairman is a permanent officer who is in charge of all of the various editorial committees.

The final approval of standards is a function of the main committee.

The present status of Austrian standardization is summarized in the following table.

Industrial groups	Completed standards	Published for criticism	Work under way	Total
A. General standards	7	10	27	44
B. Building	67	44	11	122
BH. Mining and smelting	42		17	59
C. Chemical industry	18	21	5	44
E. Electrical engineering	55	11	37	103
F. Fire fighting		1	6	7
K. Hospitals	6	2	1	9
L. Agriculture		2	8	10
M. Mechanical engineering	358	28	33	419
V. Traffic	34	8	8	50
Total	587	127	153	867

One of the most important projects carried out by the Ö. N. I. G. relates to general specifications for petroleum oils, applying to steam, gas, oil engines, and refrigerating machinery. These specifications were completed after two years of research.

Another subject of study is hospital standardization, with special reference to appliances used by the patient, equipment, including beds, cabinets, tables, and surgical instruments. Such work is similar to that now being carried on in Germany.

Standardization is being conducted in the field of mining on such items as mine cars, crown drills, compressed air motor connections, ventilating air pipes, splice plates, track gates, tools, including drills, picks, axes, and mine insertion of the handles of common tools.

Austrian standardization places particular emphasis on simplification. By standardizing the height of nuts at eight-tenths diameter, substantial savings have been effected by industry. Eighty per cent of all roofing paper produced is made in 4 thicknesses, instead of 11 thicknesses as formerly. Lumber, formerly manufactured in 35 widths and 24 thicknesses, is now produced in 25 widths and 14 thicknesses. One type of mine car now replaces the 32 once used for carrying coal, ore, and salt. Sixteen mine-track gages have been reduced to four.

SIMPLIFICATION OF WIRE SCREEN CLOTH APPROVED BY INDUSTRY

For many years the wire screen cloth industry has been manufacturing a complete line of black painted, electro-galvanized, bright galvanized, copper, and commercial bronze wire screen cloth, in meshes 12, 14, 16, and 18, and in an ever increasing variety of widths. Because of change in demand, many of the items manufactured were no longer required.

Recognizing the need for simplification in the industry, the Wire Screen Cloth Manufacturers' Institute appointed a committee to study production and demand, and to prepare a simplified list of varieties. The Bureau of Standards was then requested to call a general conference of manufacturers, distributors, and users of the commodity, to consider the program and develop a simplified practice recommendation. This general conference was held June 18, 1931, in New York City. Following the informal approval on the part of the general conference, the program was submitted to the entire industry for written approval, which it has been accorded.

The recommendation provides for screen made from two kinds of wire, steel and nonferrous. Two descriptions of steel screen wire are included, painted and zinc coated by the electrolytic method. In the nonferrous group, two descriptions are included, and these are commercial bronze and hard-drawn copper. The former is a trade term to designate wire made of copper and zinc, and is not to be confused with bronze which is made of copper and tin.

Although the demand for 12-mesh screen is declining rapidly, the committee found that some sections of the country still use it, on account of the low price, and for that reason retained this mesh in painted screen. It was also retained in the zinc-coated material, along with 14, 16, and 18. The same size wire, 0.0110, is specified for both painted and zinc-coated wire. The adoption of the same size wire for all meshes is a desirable step which it is expected will result in economies to manufacturers because it will simplify manufacturing processes and reduce inventory of wire stock. For screen wire made of commercial bronze or hard-drawn copper, 14, 16, and 18 mesh is retained. As in the case of steel-wire screen, one size wire, 0.0113, is specified for both varieties. This, as in the former case, is expected to result in economies in production.

For each description of screen wire, 14 widths of roll are specified. These start at 18 inches and increase by 2-inch steps to and including 42 inches. The widest roll is 48 inches, a 6-inch step from 42. All rolls contain approximately 100 linear feet. For those who desire a quick check on copper and commercial-bronze cloth, there is included in the recommendation a table showing the weight for 100 square feet of 14, 16, and 18 mesh screen.

Production figures compiled by the Wire Screen Cloth Manufacturers' Institute disclosed that the retained varieties will meet the normal requirements of the trade. The schedule retains 154 items, covering description, meshes and widths. Formerly there were 360 items. The elimination of 206 items represents a reduction of approximately 57 per cent. The eliminated items are four meshes of bright galvanized and three meshes of painted screen cloth in 20 widths each. Six widths of all retained have been eliminated.

Wire insect screen cloth, generally called fly screen, is used principally for screening residences and buildings, but also finds some use in specialty fields, such as protective covering for growing tobacco.

FEDERAL SPECIFICATIONS

Thirteen specifications were acted on by the Federal Specifications Board during the month of February. Of this number 10 were submitted for revision and 3 for consideration as proposed specifications. Copies of these specifications (in mimeographed form) and further information can be obtained from the Federal Specifications Board, Bureau of Standards, Washington, D. C.

New designation	Specifications to be revised	F. S. B. No.
	Plumbing fixtures (for land purposes)	448
W-F-801	Fuses, cartridge, inclosed, nonrenewable	56
ZZ-T-381a	Tires, automobile and motor cycle, pneumatic	--------
QQ-B-71	Bars, reinforcement, concrete	350a
QQ-1-686	Iron, wrought (refined), bars	391
QQ-S-611	Spiegeleisen	273
QQ-S-711	Steel, structural, for bridges	351a
QQ-S-721	Steel, structural, for buildings	352a
QQ-S-731	Steel, structural, for cars	373a
CCC-T-191	Textiles, test methods	345a
	Specifications proposed	
	Hydrometers, testing outfits, storage battery	--------
	Cloth, wire (for insect screens)	--------
W-F-396	Fire-alarm systems, electric, hand operated, shunt type	--------

CERTIFIED CONCRETE MASONRY UNITS

Underwriters' Laboratories Inspection and Certification Service Helps to Maintain Products of Standard Quality

By W. D. M. ALLAN[1]

The present inspection service on hollow concrete building units of Underwriters' Laboratories (Inc.) was established in 1927 to supersede a label service form of factory supervision which was inaugurated in 1926 and the purpose of which was identical with that of to-day's service.

The purpose of the present service is to assist the concrete masonry industry " in maintaining a product of standard quality and to supply such information as may be needed by regulatory and insurance rating bodies throughout the country concerning respective manufacturers of the material."

Certificates of inspection, which are prepared by the concrete masonry manufacturer and issued by authorized engineers and inspectors of Underwriters' Laboratories, to-day are " furnished buildings and other constructions as evidence to the user of the material and to building authorities that the product covered by same is of standard uniform quality conforming to existing requirements as determined by factory and field inspection."

The service for concrete masonry units is operated under classes B–5 (12-inch walls) and C–3 (8-inch walls) as listed in the Bulletin of Fire Retardant Classifications of Building Materials and Assemblies, issued July 16, 1930, by Underwriters' Laboratories. Class B–5 includes " materials and assemblies," which are classified as " between 5-hour and 8-hour fire retardants "; C–3, those classified as " between 3-hour and 5-hour fire retardants."

At present the inspection and certification service is operating in 17 States and 1 Province of Canada, according to reports from Underwriters' Laboratories. The service also is available to other concrete masonry manufacturers in other or the same States, if and when these producers request it.

In California, Florida, Georgia, Illinois, Indiana, Louisiana, Massachusetts, Michigan, Mississippi, Nebraska, New Jersey, New York, North Carolina, Texas, Virginia, Washington, Wisconsin, and British Columbia there are 52 manufacturers of concrete masonry units which are operating under the inspection service. Many of these plants enjoy State-wide distribution of their products and some do considerable interstate business, indicating that certification of concrete masonry buildings and constructions has a broader field than the 17 States in which the factories are located. Since the establishment of the service millions of conceret masonry units have been certified throughout the country.

Insurance inspection and rating bureau in forty-odd States and in one or two Provinces in Canada recognize certified concrete masonry by preferential rating treatment, and a number of building officials throughount the country also recognize its quality without the necessity of additional periodic tests by their departments.

Manufacturers operating under the inspection service on hollow concrete building units have agreed with Underwriters' Laboratories to issue certificates only under the following conditions, and compliance with these conditions is determined by field inspections by the laboratories before certificates are issued: "(*a*) Material for which certificates are prepared will be made in accordance with requirements developed as a result of a number of major series of fire tests. (NOTE.—The requirements of the present standard are indicated in Underwriters' Laboratories standard for hollow concrete building units, dated September 26, 1930.) (*b*) No material, known to be substandard, will be used in the same wall assemblies in conjunction with standard material for which certificates are prepared. (*c*) All standard material included in a specific assembly referred to by certificate shall be properly covered by the certificate. (*d*) All certified material shall be used for the purposes described on the certificate unless the laboratories are informed of the change. (*e*) The laboratories reserve the right to cancel certificates for material shipped since the preceding factory and field inspection in the event that inspection of a representative percentage of such material develops substandard features or misuse in connection with the above and other rules of the service."

Complete factory and field inspections of the products of listed manufacturers are made at intervals of from once a month to once a week, depending on the production of each plant, and the service is of such form that it can be temporarily suspended during periods of temporary inactivity in the production of standard material.

Manufacturing processes, raw materials, and finished product are checked in detail at each factory inspection. Strength, design, dimensions, composition, proportion, consistency, and curing methods are reviewed to determine compliance with the requirements. Periodically samples of aggregate and finished units are selected for chemical analysis and strength test, the majority of strength samples being selected from the field.

Field inspections are conducted in conjunction with the inspections at the factory. A minimum of 2 and a maximum of 10 buildings are inspected at each field inspection. When a manufacturer has certificated material at a considerable number of buildings since the preceding inspection, care is taken that the maximum of 10 buildings visited fairly represents the general use of the material, including both large and small shipments.

The use, size, and amount of material is checked with that indicated on the certificate, and the appearance and condition are noted. At each factory and field inspection, an average of five sample blocks are selected for strength test. General condition and quality of the product are roughly determined by observation of the number of broken and damaged units. When any quantity of such material is noted, it is essential that strength samples be selected from the location in question. A field inspector usually breaks one or two units at each building visited to determine the approximate amount and kind of coarse aggregate used.

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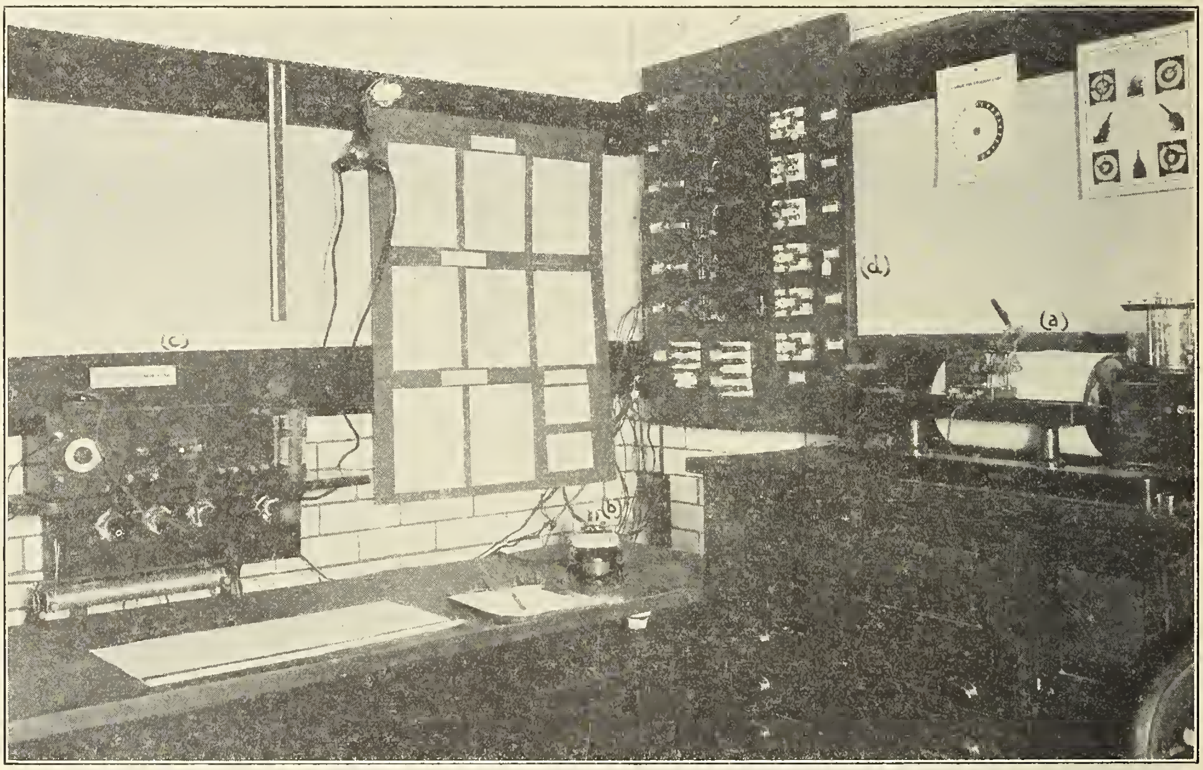
[1] Manager, Cement Products Bureau, Portland Cement Association, 33 West Grant Avenue, Chicago, Ill.

Additional information concerning the inspection and certification service, which this article has described and which is helping manufacturers to maintain a high standard of quality in concrete masonry units and concrete masonry construction, is given in a bulletin, Inspection Service on Hollow Concrete Building Units, published by Underwriters' Laboratories (Inc.), 207 East Ohio Street, Chicago, Ill.

TIME MEASUREMENTS IN THE LABORATORY

In the testing of timepieces at the Bureau of Standards a Riefler astronomical clock is used as a standard because of its extremely small daily variation, about 0.02 second a day, or within about 1 part in 4,000,000. This clock is kept at constant temperature and air pressure. It has a contact wheel from which electrical signals are made to operate the pen of a chronograph, and thus make a permanent record of the time intervals. In order to determine accurately the rate of this clock the signals from it are compared daily with those received from the Naval Observatory through the Arlington Radio Station. (See illustration.) Constant temperature rooms, which are electrically controlled, are maintained for testing purposes.



A corner of the time section laboratory at the Bureau of Standards showing (a) the chronograph, (b) the time stamp, (c) the radio receiving set, and (d) the switchboard for distributing the time signals from the Riefler clock

In measurements involving short intervals of time, watches, clocks, and timekeeping instruments of this nature are not sufficiently accurate, and other means must be found to obtain and maintain standards. Much research has been carried out on tuning forks, vibrating crystals, and pendulums for this purpose with this end in view.

One use of the pendulum, which gives promise of successful results, involves the use of a photo-electric cell to obtain a signal from a pendulum without any mechanical contact and at the same time to cause an electric impulse to be given to the pendulum. A light beam is caused to fall upon a mirror attached to the pendulum and to be reflected through a narrow slit to a photo-electric cell. The action of the cell is amplified by means of a radio amplifier and operates a sensitive relay from which signals may be distributed. Signals from this relay can be made to operate a contacting device which will cause a small electric current to be sent through the coils of an electromagnet at predetermined intervals. A small iron bar, attached horizontally to the lower end of the pendulum rod, swings into this coil and the magnetic effect upon it causes the pendulum to be kept in motion. By setting the slit in front of the photo-electric cell so that the light falls upon the cell only when the pendulum is in the vertical position the instant of impulse and of the signals may be controlled. Seconds signals received in this way are good to better than 0.001 second, and by inclosing the pendulum in a case at constant temperature and pressure signals accurate to 0.0001 second should result.

COAL-MINE BLASTING

Bureau of Mines Actively Engaged in Reducing Mine Hazards by Testing and Classifying Explosives

By A. C. Fieldner and Alden H. Emery[1]

Every ton of coal which is mined must be broken from a solid lump, so to speak, acres in areal extent and many feet thick, into sizes which can be handled by the miners and used by consumers. This is done with explosives. Holes are drilled into the coal, explosives are placed in the holes, and they are fired. The broken pieces are removed from the mine to be put on the market; and the process is repeated.

This necessary operation of blasting introduces several hazards into the life of the miner. He may handle the material carelessly and be blown to pieces. The flame, which accompanies the discharge of all explosives, may ignite inflammable gas, always present in the air of some mines and a possible constituent of the atmosphere in all mines. The least that such ignited gas can do is to burn a few luckless individuals. More frequently it initiates a widespread explosion, in which hundreds of lives may be wiped out in a single disaster. Therefore, one of the first investigations of the newly formed Bureau of Mines was to develop methods for reducing the danger from the legitimate use of explosives.

These studies showed that the size, duration, and intensity of the flames from the explosives then in use in mining coal varied with the composition of the explosives. For example, a sample of black blasting powder gave a 50-inch flame lasting 1,540 milliseconds, while another type of explosive had only a 20-inch flame of 0.3 millisecond duration. It is obvious that the larger, more prolonged, more intense flame gives greater opportunity for the ignition of any flammable gases or dusts present in the air.

From these studies came the idea of classifying all explosives into two groups—those that are relatively safe and those that will readily ignite explosive mixtures; or, as they have been designated " permissible," and " nonpermissible " explosives. Thorough tests for safety were therefore developed, and through the cooperation of the manufacturers, who now submit to this bureau all new coal-mining explosives for test before placing them on the market, it is possible for miners to work with a minimum of risk from this source. At present there are 138 explosives which have passed these Bureau of Mines safety tests and are designated as permissible.

The liability of an explosive fired in a mine to initiate a wholesale explosion is determined in a steel gallery 100 feet long. Various quantities of coal dust may be distributed throughout this gallery, or gas in different amounts may be admitted, or both, and the effect noted of the discharge of different explosives under different conditions. From these data the safest composition of explosives and the least hazardous methods of use can be determined.

While investigating means for reducing the liability of ignition of gas and dust in mine air, the Bureau of Mines did not forget the possibility of fatal accidents from the discharge of explosives in handling. As part of its accident-reduction program, the bureau has encouraged the production of explosives which are not too sensitive to sudden impact, friction, or other external influences. To this end, it has studied the sensitivity of many types of material and has determined the relation between composition and sensitivity.

It must not be thought that the reduction of flame and increase of stability are effected simply by reducing the power of the explosive. These materials are used for the definite purpose of producing a force sufficient to break the massive coal or rock into sizes that can be handled and used. To be sure that the tested explosives are not only safe, but that they will do the work for which they were manufactured, tests are made in a ballistic pendulum. In this test the explosive is discharged in contact with a steel pendulum weighing 16 tons. The swing imparted to this mass is a measure of the strength of the explosive.

The detonation of all explosives results in the liberation of gases, many of which are very poisonous. Determinations of the amount and composition of these gases, which vary with the composition of the explosive, are made to ascertain the material which can be used with the least danger from gaseous products.

Safety, stability, and strength are not the only qualities desired in these materials. Lump coal brings a higher price than fine sizes. Therefore, the proportion of lump coal produced by explosives of various kinds and under different conditions of use has been determined. As a result of this study, one mine increased its lump coal 7½ per cent and decreased its explosive consumption 31 per cent.

From these and similar physical studies conducted at the Explosives Experiment Station, Bruceton, Pa., and from chemical tests made at the Pittsburgh Experiment Station have come recommendations for the manufacture of explosives of maximum safety and efficiency.

The recent discovery, development, and marketing of new and better products for fumigation, refrigeration, anæsthesia, and other purposes, has brought the question of their safety to the public attention. Therefore, studies have been made of the explosibility of many of these compounds and the effect of inert gaseous diluents upon their explosive limits. The application of these results will materially reduce the hazards from the use of such newer articles of commerce.

Other problems that have engaged the attention of the explosives section of the Pittsburgh Experiment Station since its establishment have included the selection of the proper explosives for engineering and mining operations, the testing of detonators, the measurment of the sensitivity of trinitrotoluene (T. N. T.), the selection of primers for high explosives, the use of liquid oxygen explosives (L. O. X.), the adaptation of liquid carbon dioxide (CO_2) to blasting, the photography of explosive flames as an aid to the study of the rate of detonation of explosives, and other studies of a similar nature.

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[1] Chief engineer and assistant to chief engineer, experiment stations division, U. S. Bureau of Mines.

"BUY PEAS BY LABEL," FOOD OFFICIAL URGES

"Peas are not just peas to the discerning housewife," says Dr. P. B. Dunbar, assistant chief of the Federal Food and Drug Administration. "One of the first vegetables to be canned, peas remain one of the most popular with consumers. Canners generally are helping the housewife make her choice by making their labels more informative."

The buyer who consistently reads labels will soon come to know the difference between such terms, for example, as "early peas" and "sweet peas," according to Doctor Dunbar. The former are early June peas, having a smooth skin. Sweet or sugar peas mature later, have a wrinkled skin and a sweet taste.

When canned, early peas usually are separated into various sizes by the sieve method. The small No. 1's are called "small peas," or "petit pois." The next, or No. 2's, are called "early June extra sifted." No. 3's are called "early June sifted," and the large peas, No. 4's or larger, are generally labeled merely "early June." Some peas, when not graded as to size, are called the "run of the pod."

"The national pure food law does not require canners to label their peas as to variety or as to size, but when such labels appear they must be accurate," states Doctor Dunbar. "Canners, recognizing that buyers are rapidly learning to buy by label more and more, are adding to the information which they print upon their labels. The law does require that the manufacturer print upon his labels the statement as to the quantity contained in the can, and this statement must be truthful."

The canners' bill, a recent amendment to the Federal food and drugs act, requires that canned peas, as well as other foods, which do not meet certain defined standards, be labeled with the wording, "Below U. S. Standard, Low Quality but Not Illegal." Under this law, the canner who does not fill his cans to at least 90 per cent of their capacity is required to brand the goods as "slack filled." The buyer may find on some canned foods both of the above designations, but she need have no fear that she is getting an unwholesome or inedible product.

SPECIFICATION OF FREE-WHEELING LUBRICANTS AMENDED

A joint meeting representing the Society of Automotive Engineers, the American Society for Testing Materials, and the American Petroleum Institute, held January 22, 1932, in Washington, in considering proposed specifications for free-wheeling lubricants modified them so as to make the restrictions somewhat less severe. The amended specifications differ from those already offered in that the viscosity tolerances are wider. The meeting voted to have the amended specification published in the official journal of the Society of Automotive Engineers for the information of the members with the idea that at the next opportunity (which is the summer meeting in June) they may be brought up for adoption as Society of Automotive Engineers' recommended practice.

For free-wheeling lubricant No. 110, the minimum permissible temperature for operation was increased to 40° F. Although the temperature originally specified was 35° F., the wording of the specification actually defined a limit of 38°. A table of viscosities was substituted for the viscosity factor in order to keep the minimum temperatures at the desired values instead of permitting a variation, as would result by the use of the factor.

The viscosity numbers for free-wheeling lubricants constitute a classification in terms of viscosity and consistency only. Other factors of quality or character are not considered. These lubricants must be well-refined products which do not contain any substances to build up artificial viscosity, nor are fillers or abrasives, such as talc, pulp, cork, fuller's earth, graphite, mica, asbestos, etc., permissible.

The purpose of the changes in each case has been to extend the source of supply to provide for more nearly universal distribution and availability of these lubricants, and it is largely on this basis that the lubricants division of the Society of Automotive Engineers, representing both the automotive and oil industries, has delayed its recommendation for adoption in the anticipation that further study and use of the foregoing classification will lead to its adoption by the society this coming June.

JAM OR JELLY

"Many women who once were proud of their ability to make james and jellies now buy these foods at the store, but usually with much less care than they would have exercised in putting up fruits in their own kitchens," says W. J. Sale, of the Federal Food and Drug Administration.

Mr. Sale points out that there are three classes of jams and jellies on the market—pure goods, compounds, and imitations. There is a great deal of difference in the amount of fruit contained in compounds and in pure jams and jellies, and there is a still greater difference in relative quality between an imitation and the pure article. The legal requirement as to the proportion of fruit to sugar is not less than 45 parts of fruit to each 55 of sugar for pure jams and jellies. When a label contains the name of a fruit in conjunction with the word "jam" or "jelly," without further qualification, it may be taken as a pure article. Mr. Sale explains that a compound jam or jelly must contain a sufficient proportion of the fruit or fruit juice, indicated by the labeling, to characterize it definitely. The proportion, in the case of preserves, is not less than 25 parts of fruit to each 55 of sugar. The labeling of these compounds clearly differentiates them from the genuine.

Imitation jams or preserves differ from the compounds in that they contain less than 25 parts of fruit to each 55 of sugar, and the lower fruit content is additionally supplemented with pectin-acid solution. Imitation jams or jellies may contain added artificial color and flavor, but these must be declared upon the label. Labels on this class of foods declare them to be imitations and also inform the buyer as to the ingredients present.

"Some manufacturers put up packages containing a full 16 ounces," says Sale, "but others sell packages containing 15 or 14 ounces, or even less. The buyer who wants a full pound of jam or jelly should not be content to pay the price of a pound for a package containing less than 16 ounces. The quantity is always printed on the label."

REORGANIZED COMMITTEE WILL AID HOME OWNERS

The committee on reconditioning, remodeling, and modernizing, organized to help carry out the recommendations of the President's Conference on Home Building and Home Ownership, has been reorganized as a continuing group. It comprises an impartial body of representative persons from the technical, architectural, financial, public, social welfare, and commercial fields of business.

It is the purpose of this committee to assist home owners, local organizations, and others interested in home improvements, through educational work emphasizing benefits resultant from constructive plans for reconditioning, remodeling, and modernizing. The committee particularly hopes to be able to furnish information which will assist home owners of limited resources to make their homes more comfortable at relatively small expense. The committee also hopes to offer advice and cooperation in securing best results when using the various general classifications of building materials.

Another phase of this work is to keep the wheels of industry more evenly balanced. The use of construction materials in reconditioning, remodeling, and modernizing calls for employment of persons engaged in developing them from their basic condition to the finished products. Employment and business are therefore created. Many opportunities are offered to decrease unemployment in periods of depression. Buying power, sales, and services are stimulated in the construction and allied fields. In general, the entire community benefits through the progressive influences caused by continuous improvements to properties.

REVISION OF SOUTHERN PINE GRADING RULES PLANNED

An important part of the activities of the Southern Pine Association during the last several months has been the revision and refinement of its grading rules. This work has been handled largely by two subcommittees of a general committee, the first subcommittee dealing with the question of grading rules revisions and the second dealing with grading rules refinement.

These two subcommittees met at New Orleans on January 26 and 27, 1932, to bring their work into definite and final form for submission to the general meeting of the Southern Pine Association at its convention. If the revision and refinements which they propose are approved at this meeting, they will then become a part of the general grading rules of the association.

The discussions at New Orleans resolved themselves into three parts, the first, involved largely the policy of extending the association's grade marking to nonsubscribing mills. The principal topic of discussion on this subject was "What shall be the basis of charging unsubscribing mills for this service?" There was considerable divergence of opinion among those present as to what charges were proper. This question, of course, is quite important since if the Southern Pine Association should make their charges too high they would defeat their own purpose. On the other hand, they are entitled to something more than actual cost of inspection because of the burden of expense they have borne in promoting the idea. The actual basis of making charges to nonsubscribing mills will not be determined until their next annual meeting.

This subject of grade marking to nonsubscribing mills is quite important to purchasers of southern yellow pine. It will mean a decided extension of the possible sources of supply of grade-marked lumber and will make the idea of purchasing nothing but grade-marked southern pine stock more practical.

The second part of the discussion of these meetings was devoted to grade revisions. Complete grading specifications were proposed for dimension, factory flooring, structural timbers, small timbers, heavy joists, decking and heavy ship-lap, structural joists and plank; separate specifications being written for longleaf and shortleaf yellow pine, and provisions being made for specie marking on the basis of the new rules. The setting up of separate grading specifications for long and shortleaf yellow pine is of much importance to the industrial buyer. It will enable him to buy with assurance the specie he desires, under grading rules providing for its natural characteristics. The new grading rules for longleaf and shortleaf yellow pine conform to American Lumber Standards (Simplified Practice Recommendation No. 16).

The president of the Southern Pine Association considers this as the most important piece of work that the association has done in recent years, and doubtless these rules will be adopted at their coming convention.

The last activity, namely, grading refinements, has to do with additional definitions, change in the wording of present definitions, or additional specifications on lumber thinner than 2 inches. Consequently it involved very largely the discussion of finished materials. Their aim in this phase of activity is primarily to clarify any part of the existing rules that may be incomplete or ambiguous. Any actual changes for the most part are of minor importance.

A considerable part of their study had to do with changes in the definitions of the various defects and in so far as possible attempting to bring their definitions into line with those found in the American Lumber Standards and the American Society for Testing Materials standards.

ELECTRIC CUT-OUTS

The British Engineering Standards Association (now named The British Standards Institution) has issued a revision of specification No. 88, which deals with electric cut-outs. The scope of the new specification is, as in the old edition, confined to "ordinary-duty" cut-out, the term "ordinary duty" being defined as a function of the maximum short-circuit current in the circuit. The cut-outs are intended for use in 2-wire, 3-wire, and multiphase circuits in which the voltage to earth does not exceed 250 volts. Five sizes are standardized, as against four sizes in the old specification, this difference being due to the old 10-ampere size being displaced in favor of a 5-ampere and a 15-ampere size, corresponding to the standard ratings of plugs and sockets. The most important point wherein the new edition differs from the old is the introduction of a scientific test for blowing current, this test being designed to insure compliance with the requirements in the I. E. E. wiring regulations that the fuse link shall be of such size that it will melt, in one minute or less, by a current equal to twice the rating of the smallest cable protected by it. This test, at the same time, is designed to insure that a fuse carrier and link will have a reasonable life when carrying its rated current, and provides for the effect of preheating of the fuse carrier and tolerances in the size and composition of the fuse link. Further new tests introduced into the specifications are an insulation-resistance test, a test for breaking capacity, and a test for temperature rise. Certain general requirements of a constructional nature are also included, but the physical dimensions are not standardized.

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>
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